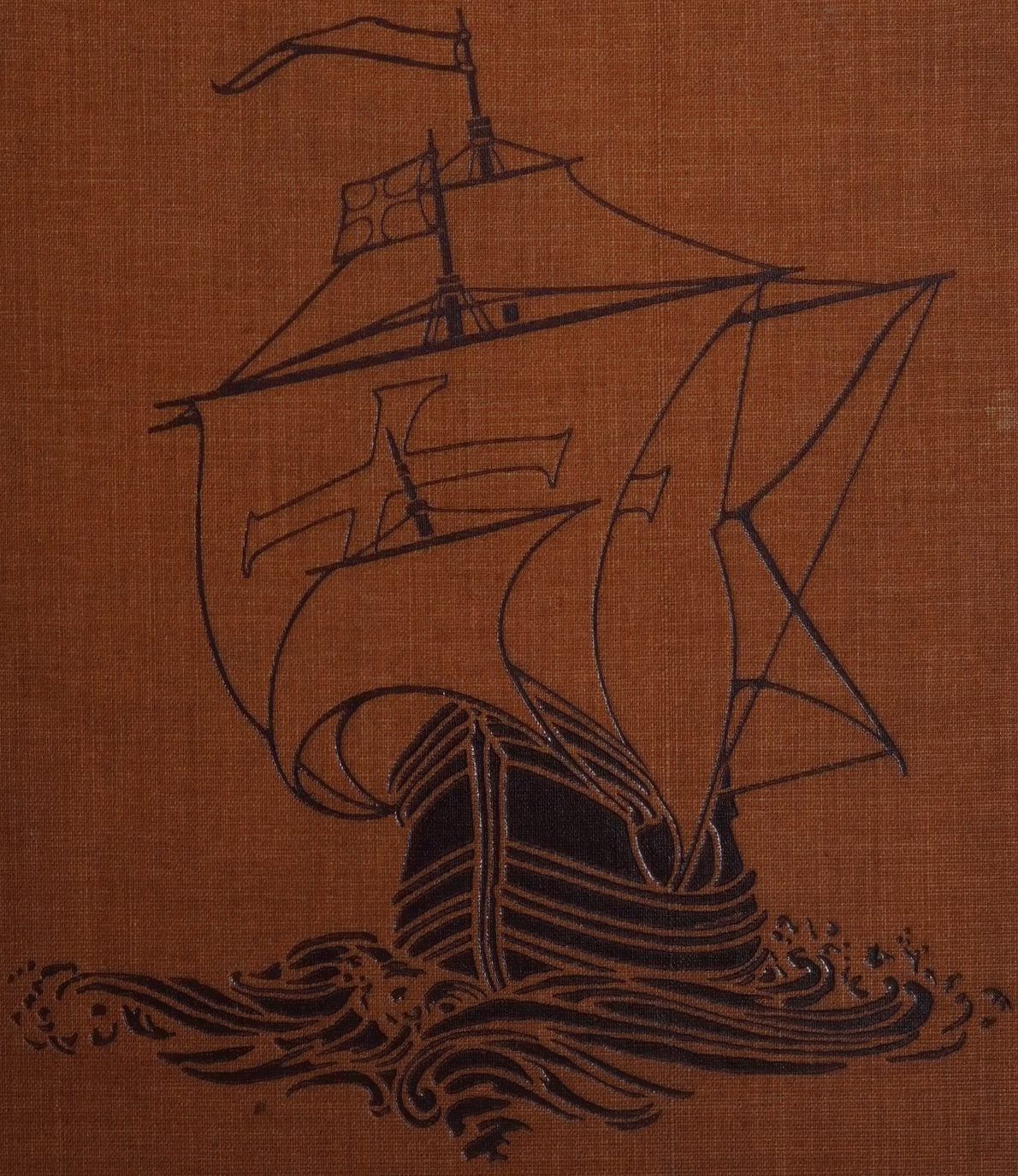
EDITION FOR OHIO

NATURAL SCHOOL GEOGRAPHY

REDWAY AND HINMAN



AMERICAN BOOK COMPANY

Helpful Geographical Readers

Baldwin's Geography of the Hawaiian Islands	$0.60
Carpenter's Geographical Readers—	
North America	.60
South America	.60
Europe	.70
Asia	.60
Australia, Our Colonies, and Other Islands of the Sea	.60
Africa	.60
Carpenter's Readers on Commerce and Industry—	
How the World is Fed	.60
How the World is Clothed	.60
Dutton's World at Work Series—	
Hunting and Fishing	.30
In Field and Pasture	.35
Krout's Alice's Visit to the Hawaiian Islands	.45
Two Girls in China	.45
Long's Home Geography	.25
MacClintock's The Philippines	.40
Payne's Geographical Nature Studies	.25
Schwartz's Five Little Strangers	.40
Shaw's Big People and Little People of Other Lands	.30
Van Bergen's Story of China	.60
Story of Japan	.65
Story of Russia	.65

AMERICAN BOOK COMPANY
NEW YORK CINCINNATI CHICAGO

U. S. Ray

1898

Page 93
Panama

THE NATURAL GEOGRAPHIES

NATURAL SCHOOL GEOGRAPHY

BY

JACQUES W. REDWAY

AND

RUSSELL HINMAN

Author of the "Eclectic Physical Geography"

NEW YORK ·:· CINCINNATI ·:· CHICAGO

AMERICAN BOOK COMPANY

COPYRIGHT, 1898, 1907, BY
AMERICAN BOOK COMPANY.

NATURAL SCHOOL GEOG.
W. P. 21

PREFACE

THE Natural School Geography is intended to follow a first or introductory text-book in the subject, and is adapted for the use of pupils of from twelve to fourteen years of age. It is designed to complete the course of geography in the elementary schools.

The central thought in the book is Man, and the Earth is studied as his dwelling place. Throughout the treatment emphasis is placed upon industrial, commercial, and political geography.

But man's activities are all influenced, and often very largely controlled, by his physical surroundings — climate, surface, soil, etc. The marked industrial differences between New England and our Gulf States are due in great measure to differences in physical features; and the same is true in varying degree of any two regions on the earth's surface.

It is thus manifest that an intelligent study of the activities of man in their causal relations must be based upon some knowledge of physical geography. For this reason, the first thirty-five pages of this book are devoted to the development, in simple, untechnical language, of the basal principles of physical and general geography. These principles are of world-wide application, and constant reference is made to them in subsequent pages. To facilitate such references, the paragraphs in this part of the book are numbered. These lessons should be carefully read and discussed by pupils and teachers, in class, before assignment for study, and before the study of the grand divisions is begun. Formal recitations on the introductory lessons may be deferred, however, at the discretion of the teacher, until the book is finished and reviewed.

The Topics for Oral and Written Work and the exercises in Correlations and Comparisons which have been inserted at convenient intervals in this book not only serve as reviews, but are so framed that they stimulate thought and lead the pupil to view what he has learned from a somewhat different standpoint. They form a nucleus for the "laboratory work" now recognized as an essential feature in the study of geography.

In recognition of the fact that well-selected geographical reading used in connection with the regular text-book greatly enriches the geography course, specific references to appropriate, entertaining, and easily accessible collateral material have been inserted at the ends of sections throughout the book, under the heading Supplemental Work. This should be used to the extent which time and circumstances permit.

Corresponding maps throughout the book are drawn on the same scale, and therefore prevent the pupil from forming the usual misconceptions regarding the comparative size of countries. A single scale serves for the colored maps of all the grand divisions; a single but larger scale, for the maps of the United States and Europe; and a single but still larger scale, for the sectional maps — with the exception of that of New England, which is drawn on three times the scale of the others. On the physical maps, the relief features are shown by contour lines in the manner now used on the best topographical maps issued by the government.

The pictures have been generally reproduced directly from photographs, and have been selected and arranged solely for the purpose of *illustrating* the accompanying text. The photograph of the Great Barrier reef reproduced on page 18 was kindly loaned by the American Museum of Natural History, New York city.

Acknowledgments are due to Dr. C. T. McFarlane, Principal of the State Normal and Training School at Brockport, New York, for valuable suggestions and assistance in revising and perfecting the manuscript.

CONTENTS

THE EARTH AS A WHOLE

PAGE

INTRODUCTORY 5
Form, Size, and Rotation of the Earth . . . 6

THE SURFACE OF THE EARTH 9
Upheaval of the Land 10
Mountains 11

WEARING AWAY OF THE LAND 12
Streams and Lakes 14
Glaciers 16
Waves and Tides 17
The Rocky Layers of the Land 18

CLIMATE — Seasons and Zones 19
Winds 20
Rainfall 22
Ocean Currents 23

PLANTS AND ANIMALS — Life Regions . . . 23
Island Life and Ocean Life 27

MAN — Races 28
Government and Religion 29
Industries — Agriculture, Herding, etc. . . . 30
Towns and Cities 35

PARTS OF THE EARTH

NORTH AMERICA, Physical Features 37
Vegetation and Animals 38
People and Countries 39

THE UNITED STATES, Physical Features . . . 43
Government 48
Population, Industries, etc. 49
The Northeastern Section 55
The Northern Section 59
The Southern Section 72
The Plateau Section 79
The Pacific Section 83

NORTH AMERICA, continued
PAGE
Countries North of the United States . . . 87
Countries South of the United States . . . 91
Correlations and Comparisons 95

SOUTH AMERICA, Physical Features 97
Vegetation and Animals 99
Man 101
Countries 103
Correlations and Comparisons 107

EURASIA, Physical Features 109
Vegetation and Animals 111
Man 113

EUROPE, People and Countries 113
Industries and Products 116
Countries of Central Europe 118
Countries of Southwestern Europe 124
Countries of Eastern Europe 126

ASIA 131
People 131
Countries 132
Correlations and Comparisons 139

AFRICA, Physical Features, etc. 141
Countries of Northern Africa 143
Central Africa 144
South Africa 145

AUSTRALIA AND THE PACIFIC ISLANDS . . . 147

COLONIES AND COMMERCIAL ROUTES . . . 150
Correlations and Comparisons 152

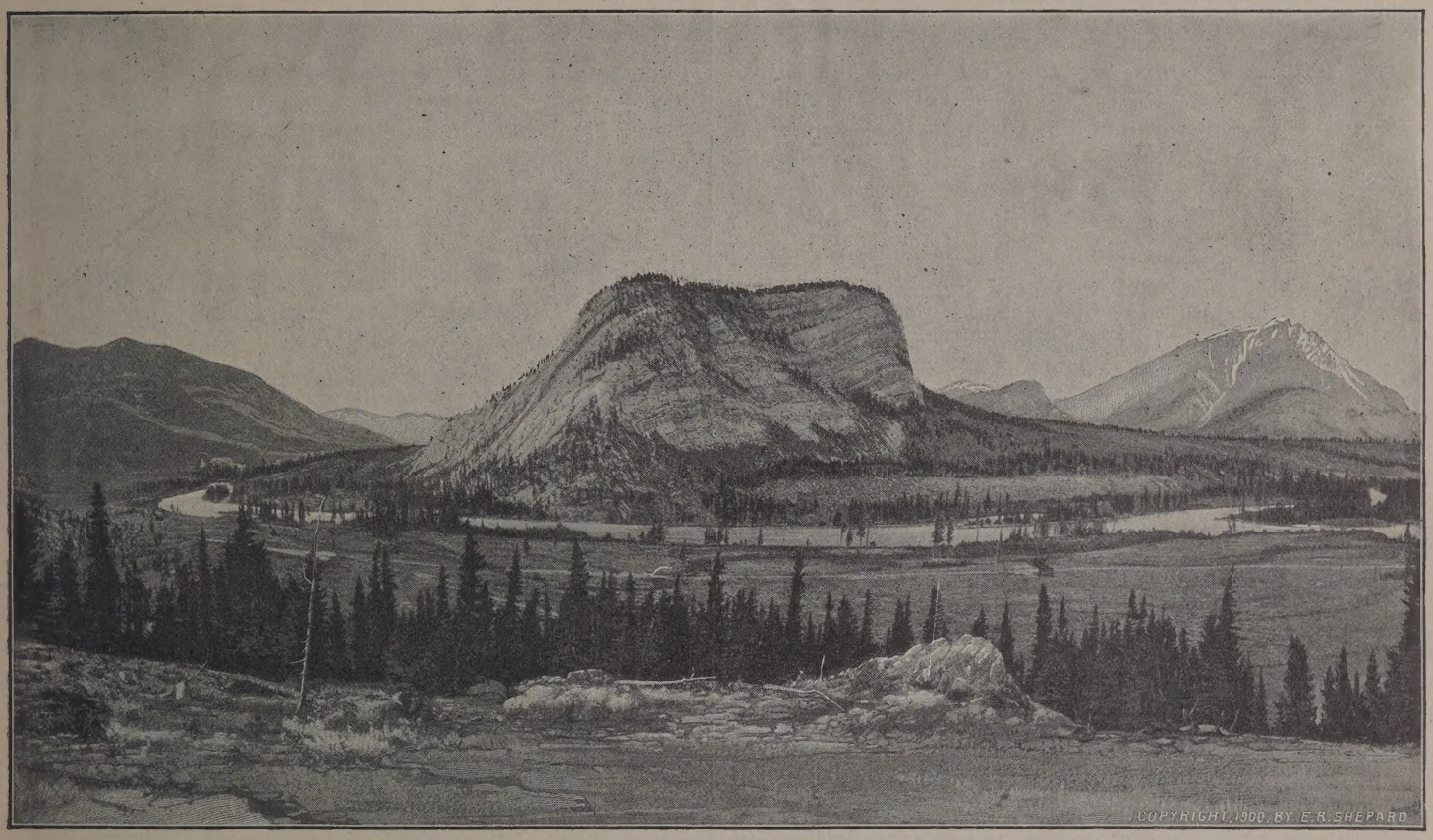
TABLES 153

INDEX AND PRONOUNCING VOCABULARY . . 156

REFERENCE MAPS . . . . . i–xxiv

SUPPLEMENT — Insular Possessions, Cuba, and Panama . xxv

NATURAL SCHOOL GEOGRAPHY



INTRODUCTORY

We have already learned much about the geography of the neighborhood in which we live — its surface, its climate, its products, and the occupations of the people; we have also learned something about the countries of other parts of the world and the peoples who live in them. To know about these is a very important part of the study of geography, but it is only a part.

As we have already learned, some parts of the earth are cold, while other parts are hot; some places are very rainy, but in others rain is practically unknown; some regions are level, others are rugged and mountainous. Some lands are densely inhabited, but in others few people live. In some places, too, the people are engaged in farming; in others the only pursuit may be mining or perhaps commerce. One country may produce wheat as its chief crop; another, coffee; still another, cotton.

Now these differences, and hundreds of others which might be noted, do not occur by chance, but are the result of definite causes. These causes are generally very complex and difficult to trace, but some of them usually have to do with the climate, or the surface features, or the movements of the earth — that is, with geography. In this book we shall learn how the geography of the various countries has helped to determine their useful products, and the occupations of the people.

We may possibly regard the country in which we live as one that is separate and distinct from all other countries. In a certain sense this is true. But the various countries are scarcely more separate and distinct than are the hands, wheels, and springs of a clock.

We may certainly learn something by studying the parts of a clock separately, but we can get a real knowledge of the use of the parts only when we see them properly together, in running order, so that each part is doing such work as its shape, position, and character fit it for.

So, too, the various countries, although they differ in form, surface, climate, and position, are all parts of the planet Earth. Each is affected by the movements of the earth, and they are all warmed, watered, and made habitable by means of the earth's atmosphere and its circulation. Therefore, in order to study the geography of the various countries with understanding, we must first learn something of the earth as a whole — its movements, surface features, climate, and conditions of life.

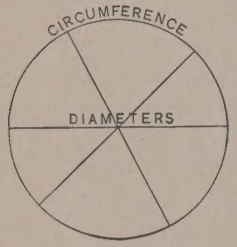
FORM AND SIZE OF THE EARTH

1. When we look over a wide level country, or over the ocean, the earth appears to be flat, but for several reasons we know that its surface is curved. (1) When a ship sails away from us, we can see the sails and the tops of the masts long after the lower part of the ship is out of sight. (2) People have traveled in one general direction entirely around the earth to the place from which they started. (3) When the earth passes between the sun and the moon, the earth's shadow, which falls on the moon and darkens, or *eclipses*, it, is seen to be always round. As a sphere is the only body whose shadow is always round, we know that the earth is spherical.

But the earth is not a perfect sphere. It is slightly flattened on two opposite sides, so that its shape is somewhat like that of an orange.

2. The *diameter* of the earth, or the distance through its center from side to side, is about 8000 miles; its *circumference*, or the greatest distance around it, is about $3\frac{1}{7}$ times its diameter.

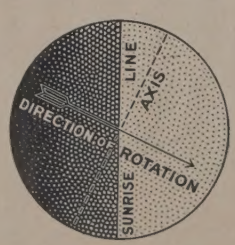
3. We are likely to wonder why the people and loose objects do not slide off the earth or drop away from the other side of it. If you raise a stone from the ground on any side of the earth and then let go of it, it falls to the ground again. The earth has the power of pulling objects toward itself, and the pull is so strong that it keeps loose bodies close to the earth's surface. This wonderful power is called *gravity*.



Tests. How do we know that the shape of the earth is spherical? How long is the earth's diameter? How many miles in the earth's circumference? A fast steamship sails about 500 miles a day; how long would it take to sail the greatest distance around the earth? What is meant by gravity? Of what use is it?

ROTATION OF THE EARTH

4. The earth is always spinning, or *rotating*, slowly upon its shortest diameter, or *axis*. The rotation of the earth causes the succession of *day and night*, and aids us in determining *time*, *direction*, and *location*.

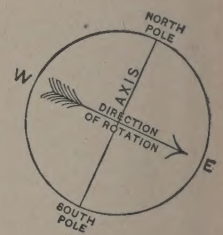


5. **Day and Night.** The earth gets most of its light and heat from the sun. Only the side of the earth toward the sun is lighted; the other side is in darkness. As the earth rotates, any place on the surface is thus bathed in daylight while that part of the earth is turned toward the sun, but is in the darkness of night when it is turned away from the sun.

Sunrise or sunset at any place occurs when that place is carried by rotation across the line which divides the light from the dark side of the earth.

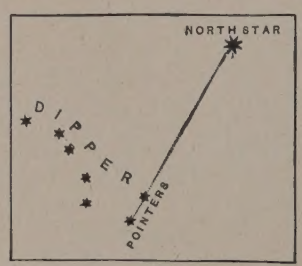
6. **Time.** The time required by the earth to make one complete rotation is a *day*. For convenience we divide a day into twenty-four equal parts, called *hours*, which are subdivided into *minutes* and *seconds*. Clocks are machines which indicate the speed of the earth's rotation in such a way that we can easily determine the passage of these subdivisions of a day.

7. **Direction.** The direction in which the earth rotates is called *east*. As the earth turns eastward, the sun appears to move across the sky in the opposite direction, which is called *west*. *North* is the direction on the earth's surface from any place to the end of the earth's axis called the *north pole*, while *south* is the direction to the other end of the axis, called the *south pole*. If you stand facing east, your left side is toward the north pole, and your right side toward the south pole. *Northeast* is the direction between north and east; *southeast*, the direction between south and east; etc.



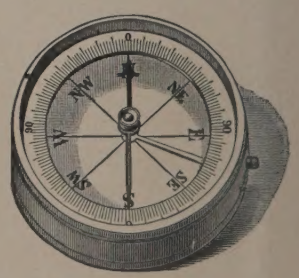
8. The earth rotates so slowly that it is hard to tell at once which way it is moving, but there are easy ways to find directions.

(1) About the 21st of March and the 21st of September the sun rises exactly in the east, and sets exactly in the west. During our summer months the sun rises a little north of east; and during our winter months, a little south of east.



(2) In our part of the world the sun at noon casts the shadow of any upright object toward the north.

(3) In our country the North Star may be found any clear night by the aid of two stars (the "Pointers") in the star group called "the Dipper." The direction along the earth's surface toward the North Star is north.

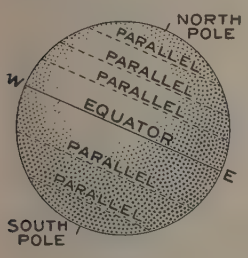


COMPASS.

(4) The directions may be found very closely at any time by means of the *compass*. This is a little bar of magnetized steel, called the magnetic needle, balanced on a pivot so that it can swing freely. When the needle comes to rest, it always points to a place near the north pole.

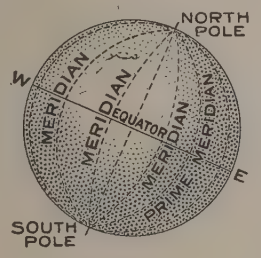
9. Location. A sphere is equally curved in all directions, and has neither corner nor edge from which to begin measuring or locating points on its surface; therefore it would be hard to describe the location of places on the spherical earth, were it not for the earth's rotation. Rotation fixes the position of the earth's axis, and the ends of the axis, or poles, are points from which we may locate any other place on the surface. We imagine a line drawn around the earth halfway between the poles. This line is called the *equator*, because it divides the earth's surface into equal parts — a northern and a southern half, or *hemisphere*.

10. To locate a place in a north and south direction, we indicate its distance north or south of the equator. This distance is called *latitude*. Places north of the equator are in north latitude; those south of the equator, in south latitude. All places on the same side of the equator and at the same distance from it are in the same latitude. A line connecting such places is parallel with the equator, and so such a line is called a *parallel of latitude*. Any number of such parallels may be drawn. They all extend exactly east and west.



PARALLELS.

11. At all places on the same north and south line noon occurs at the same instant. A north and south line extending from the north pole to the south pole may therefore be called a midday line, or *meridian*. We may imagine a meridian to pass through any place on the earth. The meridian which passes through Greenwich, a part of London, is taken as the *prime meridian*.



MERIDIANS.

A place is located in an east and west direction by indicating the distance of its meridian east or west of the prime meridian. This distance is called the *longitude* of the place.

12. Thus we can describe the exact location of any place on the earth's surface by stating its latitude and longitude; that is, its distance north or south of the equator, and its distance east or west of the prime meridian.

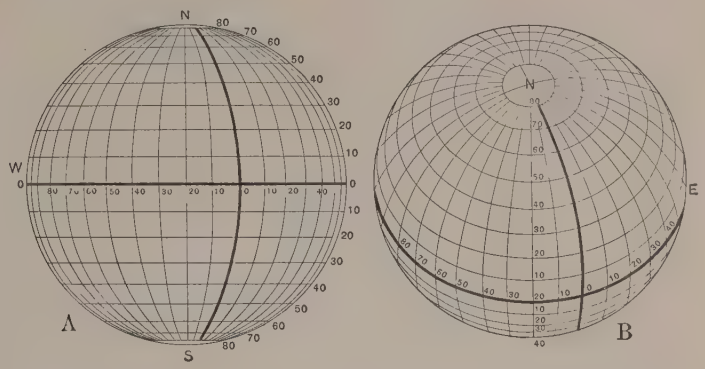
13. Measurement of Latitude and Longitude. Latitude and longitude are measured in *degrees*.

The degrees of latitude are numbered from the equator north or south. There are ninety degrees (90°) from the equator to either pole.

Thus a place 10° north of the equator is said to be in latitude 10° north; a place 20° south of the equator is said to be in latitude 20° south; etc. The north pole is in latitude 90° north, and the south pole, in latitude 90° south. (See diagram at the top of next column.)

Put your pencil on the parallel of 10° south latitude; of 30° north latitude. Show where the parallel of 45° north latitude should be drawn.

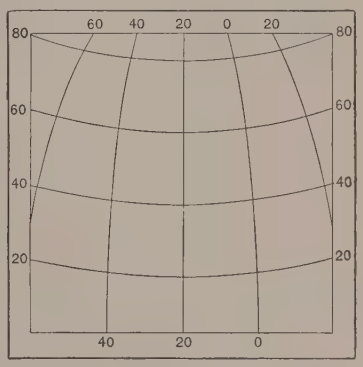
The degrees of longitude are numbered from the prime meridian east and west halfway round the earth to the meridian of 180°.



A place 40° east of the prime meridian is said to be in 40° east longitude, and a place 70° west of the prime meridian, in 70° west longitude. The meridian of 180° east longitude is the same as the meridian of 180° west longitude.

Put your pencil on the meridian of 60° west longitude. Locate a point in 35° north latitude and 65° west longitude.

14. Several parallels are usually drawn on maps, sometimes as straight lines, but generally as curved lines, as shown in this diagram, and the distance of each in degrees from the equator is marked on the side margins of the map. Several meridians are also usually drawn on maps, and the distance of each in degrees east or west of the prime meridian is marked on the top and bottom margins of the map.



It should be borne in mind that east or west on a map is always along the parallels, no matter how curved they may be; and that north or south is always along the meridians.

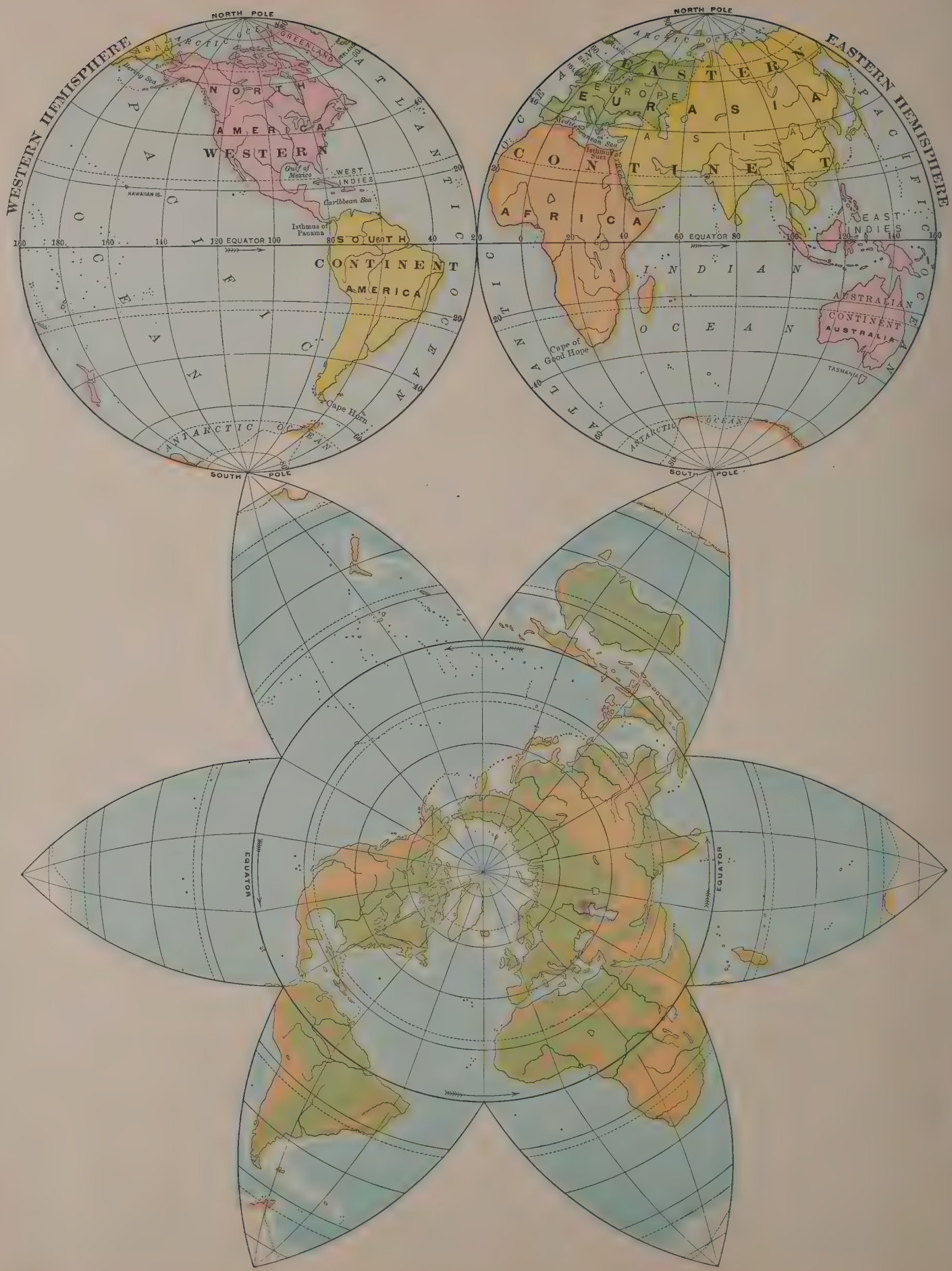
Tests. Define axis; poles; rotation. Explain day and night. Define a day; its divisions. How is a clock related to rotation? Name and define the chief directions. Give four ways of finding them. What is the equator? How does its location depend upon rotation? What is a hemisphere? What are parallels? meridians? What is latitude? longitude? How are they measured?

Supplemental Work. Illustrate the succession of day and night by means of a ball and a candle. If your house fronts south, are the sunny rooms at the front or at the back? Why? On a clay ball draw the equator, parallels, and meridians.

Through how many degrees of longitude does rotation carry a place in an hour? When it is noon on any meridian, what time is it on the meridian fifteen degrees to the east? thirty degrees to the west? one degree to the east? When it is noon on any meridian, in which direction, and how many degrees distant, is the meridian on which it is 6 A.M.? 3 P.M.? 3 A.M.? 12.20 P.M.?

TOPICS FOR ORAL OR WRITTEN REVIEW ON THE EARTH

I. FORM. Apparent; real.
II. SIZE. Definition and length of diameter; of circumference.
III. GRAVITY. Facts about it; use.
IV. ROTATION. Four things depending on it; explanation of each.


WESTERN HEMISPHERE
EASTERN HEMISPHERE
NORTH POLE
SOUTH POLE
NORTH AMERICA
WESTERN CONTINENT
SOUTH AMERICA
EASTERN CONTINENT
EUROPE
ASIA
AFRICA
INDIA
AUSTRALIAN CONTINENT
AUSTRALIA
TASMANIA
EAST INDIES
WEST INDIES
GREENLAND
Behring Sea
Gulf of Mexico
Caribbean Sea
Isthmus of Panama
Isthmus of Suez
Cape Horn
Cape of Good Hope
HAWAIIAN IS.
ARCTIC OCEAN
ANTARCTIC OCEAN
PACIFIC OCEAN
ATLANTIC OCEAN
INDIAN OCEAN
EQUATOR

THE SURFACE OF THE EARTH

15. The surface of the earth is not perfectly smooth and evenly curved. Some parts bulge out slightly, forming *regions of elevation*, while other parts are slightly sunken, forming *regions of depression*. The regions of depression are covered with salt water which forms the *sea*, while the parts of the earth's surface which protrude above the surface of the sea form the *land*. About one fourth of the earth's surface is land.

16. Most of the land in the world lies in three great continuous masses, or *continents;* the remainder consists of many smaller masses, or *islands*. The Western Continent is on the side of the world called the *western hemisphere;* the Eastern Continent and the Australian Continent are on the opposite side of the world, or the *eastern hemisphere*.

17. In the hemisphere maps at the top of the opposite page, the blue color represents the sea and the other colors represent the land. Name the two *grand divisions* of the Western Continent. By what narrow neck of land, or *isthmus*, are they connected? What group of islands lies between these grand divisions? What large island is northeast of North America? What island near Greenland is partly in the eastern and partly in the western hemisphere?

What isthmus is at the place where the Eastern Continent is nearly separated into two parts? What grand division is southwest of the Isthmus of Suez? The remainder of the continent is the grand division Eurasia; but Europe, the western part of Eurasia, is usually considered as a grand division, and Asia, the eastern part, as another grand division. What islands are near the coast of Europe? A small part of Asia extends into the western hemisphere; by what narrow passage of water, or *strait*, is it separated from the Western Continent? What island group, or *archipelago*, lies between Asia and Australia?

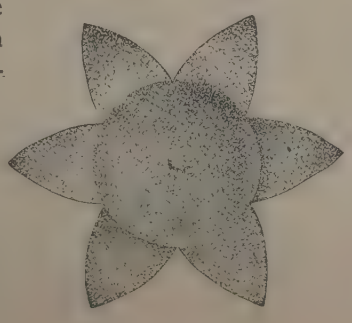
In which grand division do we live? Examine the table on p. 153, and make a list of the grand divisions in the order of their size.

What is the name of the part of the sea surrounding the south polar region? From this broad expanse of sea great *oceans* extend northward between the continents. What ocean extends northward between America and Africa? between Africa and Australia? between Australia and America? Which of these oceans is largest? Which is narrowest? Name the branch of the Atlantic Ocean which surrounds the north pole. From the table on p. 153 make a list of the oceans in the order of their size.

Supplemental Work. Make a sketch from the map, showing an island, an isthmus, a strait, and an archipelago. Model these forms.

THE CONTINENTAL PLATEAU

18. The Star-shaped Map. If we peel one half of an orange in gores, and then turn back the skin, as in the pictures below, we bring the skin of the whole orange into view. On the same principle a single map showing the surface of the whole round earth may be drawn as at the bottom of the opposite page.



The north pole is represented at the center of the map; hence *north* on this map is toward the center from all sides, and the direction of the earth's rotation, or *east*, is shown by the arrow points. The northern hemisphere is included in the largest continuous circle, which marks the equator, and the surface of the southern hemisphere is represented as divided into gores and turned up from below to form the six points.

Find the Arctic Ocean on the star map. What two grand divisions of land nearly surround the Arctic Ocean? With what ocean has the Arctic a broad connection? With what ocean is it connected by Bering Strait? What is a strait? Find the islands Greenland, Iceland, and the British Isles. Find South America; the West Indies; Africa; Australia; the East Indies; the Indian Ocean.

19. Regions of Depression and of Elevation. In the part of the sea which is represented by the darker blue, the water is very deep, the average depth being about two and one half miles. This is the true region of depression on the earth's surface.

The lighter blue represents places where the sea is much shallower, the water being less than one mile deep. If the surface of the sea were to sink one mile lower than its present level, this light blue region would become land, and all the continents would be united into a single great land mass, although the parts of the sea colored dark blue would still have an average depth of one and one half miles. Thus not only the land surface but also the bottom of the shallower part of the sea (the light blue) may be considered as forming a single great region of elevation.

20. Continental Plateau. Any broad region of elevation may be called a *plateau;* and as this great region of elevation contains all the continents, it is called the *continental plateau*. The submerged part of the continental plateau, which borders the continents, is called the *continental shelf*. On the continental shelf are located all the large and many of the small islands of the world; hence these islands are called *continental islands*. The continental plateau covers a considerable portion of the northern hemisphere, and at three places extends into the southern hemisphere. It includes almost all the land in the world, except many very small islands in mid-ocean, which are called *oceanic islands*.

21. Continents and Grand Divisions. Near the north pole and among the East Indies, the waters of the sea extend entirely across the continental plateau, forming great *continental seas*. These seas divide the continental plateau into the three great land masses, or continents.

The Caribbean, Mediterranean, and Red seas carry the water of the sea *nearly* across the continental plateau; they lie between and thus mark off the natural grand divisions of the Western and Eastern continents — North and South America, Eurasia and Africa.

TOPICS ON THE DISTRIBUTION OF LAND AND WATER

I. Continental Plateau. Position. Continents. Continental seas.

II. Islands. Continental. Oceanic.

III. The Sea. Position. Depth. Oceans.

HIGHLANDS AND LOWLANDS

22. The surface of the land rises from the sea very gradually in some places, and very abruptly in others, but the highest regions are always found some distance back from the coast. In the high regions of the earth a few places reach elevations of about five miles above the sea, but the average elevation of the land is less than half a mile. All the land below this average elevation is spoken of as *lowland*, and is indicated by green on the physical maps in this book. All the higher parts of the land are called *highland*, and are colored brown or buff on the physical maps.

Islands off the Coast of Maine.

Which side of the Western Continent is mostly lowland? (See maps, p. 8.) Which side is mostly highland? Toward which ocean is the highland side of the Western Continent? Toward which oceans are most of the highlands of the Eastern Continent?

23. **The Great Highlands.** As shown on the star map, the great highlands of the continents form an almost continuous horseshoe-shaped curve from Cape Horn to Cape of Good Hope.

24. **The Broad Lowlands.** On the outside of the highland curve the slope is generally short and steep to the Pacific and Indian oceans. On the inside of the horseshoe, however, the slope is long and gentle to the Atlantic and Arctic oceans. This slope includes most of the broad lowlands of the continents, together with several small areas of highland. In Australia the highlands are near the Pacific, and from them broad lowlands extend to the Indian Ocean.

In following the highland horseshoe curve around from Cape Horn to the Cape of Good Hope, note and name the only three places where you would be obliged to descend from the highland. It will be seen that the only breaks in the highland curve are at the places where you leave one grand division to enter another.

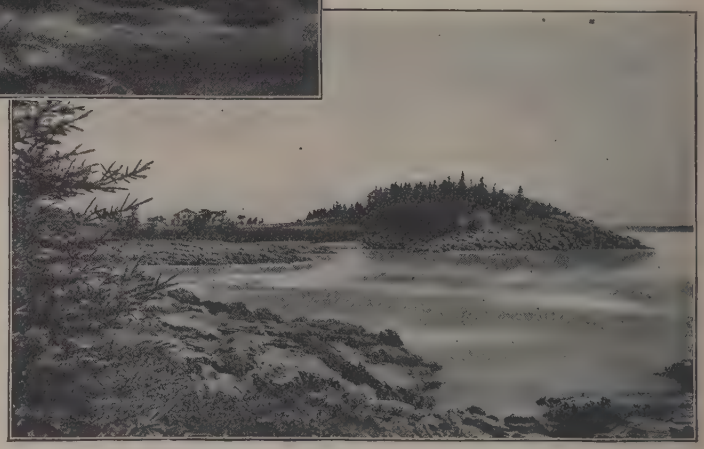
The Australian branch of the continental plateau is especially low; most of the northern part is covered by the sea, the remaining small areas forming the islands of the East Indies.

Tests. Define lowlands; highlands. Where are the great highlands of the continental plateau? the smaller areas of highland? Describe the two chief slopes of this plateau.

Supplemental Work. Model a plateau with a short, abrupt slope on one side, and a long, gentle slope on the other.

UPHEAVAL OF THE LAND

25. **Changing Levels of the Land.** It is believed that in past ages the surface of the continental plateau has been at times higher and at other times lower than it now is. Much of the present land was once so low that the water covered it, forming continental seas; and parts of the plateau now covered by water were once so high as to connect land masses that are now separate. Thus North America may have been connected with Eurasia in the Arctic regions, and southeastern Asia may have been connected with Australia.

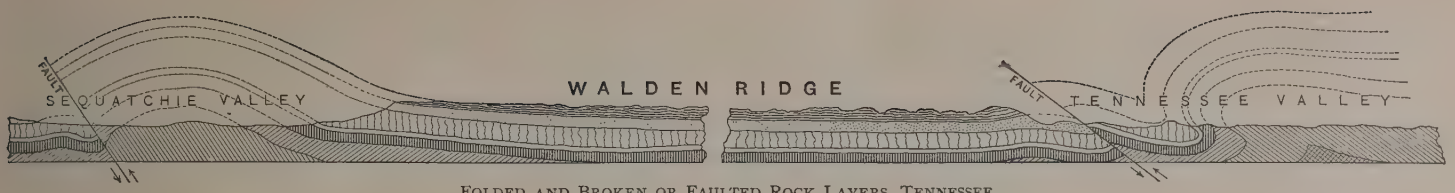


A Promontory on the Coast of Maine.

26. It is well known that such upward and downward movements of the land are *still taking place in most parts of the world*, though each movement may be so slight that it can not be seen. The jar of such a slight movement, however, may cause, over a wide district, an *earthquake*, which may be so violent as to shake down houses. Even though each movement can not be seen, hundreds of slight movements may, after many centuries, elevate the sea bottom into a mountain range.

A Fiord in Norway.

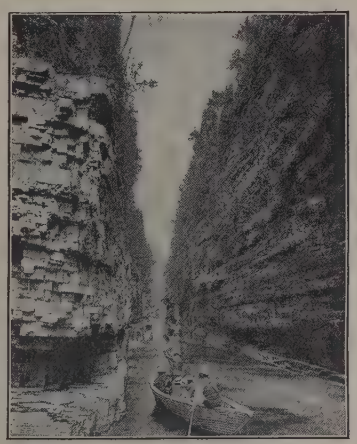
27. **Upheaval of the Land.** It is thought that *every* part of the land was covered by the sea at some time in the past and became land by being gradually upheaved above the sea. Earthquakes, though common in all parts of the world, are now most frequent near the Pacific coast and in the great highlands. Upheaval is therefore thought to be most active nowadays in those regions.



FOLDED AND BROKEN OR FAULTED ROCK LAYERS, TENNESSEE.

28. Sinking Coasts. The surface of the land is seldom exactly smooth or level. It almost always consists of higher places, or *hills*, with lower places, or *valleys*, between them.

Therefore, when a coast region is slowly sinking beneath the sea, the valleys are first submerged. Up these the water may extend far into the land. Such arms of the sea form *gulfs* or *bays* if they are wide, and *fiords* or *estuaries* if they are long and narrow.



NEARLY LEVEL ROCK LAYERS, AUSABLE, N.Y.

The higher parts of the coast, left projecting into the sea between the indentations, are called *peninsulas*, and the ends of these form high capes, or *promontories*. Some peninsulas are connected with the mainland by only a narrow neck of land, or *isthmus;* and when by continued sinking the water covers the isthmus, the highest part of the former peninsula is left as an *island*.

Thus a sinking coast is usually irregular, with many bays and peninsulas, and is quite often fringed with islands.

29. Rising Coasts. The sea bottom, even near the coast, is much smoother and more nearly level than the surface of the land. It has very few short and steep slopes such as are seen on the ordinary hills and valleys of the land.

Therefore, when the smooth sea bottom along the rising margin of a continent is brought above the surface of the sea, it usually makes a comparatively even and regular coast line.

The coasts of the Arctic Ocean and of the North Atlantic are very irregular, and long stretches of these coasts are known to be slowly sinking. The Pacific coast of America is generally quite regular, and seems to be rising.

Tests. How are earthquakes often caused? Explain the effect of sinking on a coast; the effect of rising.

Supplemental Work. Find out something about the San Francisco earthquake of 1906. Make a sketch from the map (p. 8), showing a gulf or bay, a peninsula, and a cape. Model in a pan, with clay or putty, an island having a regular coast line but an irregular surface. Show, by pouring water into the pan, how the sinking of the island would make the coast quite irregular.

MOUNTAINS

30. Level Rock Layers. In many places the layers of bed rock which are found beneath the soil have been but little disturbed in the upheaval of the land, and are still nearly level as they were when beneath the sea. *This is often the case in lowland regions.*

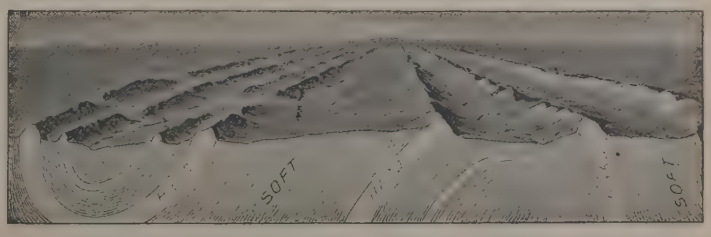
31. Rock Folds. In other places the layers of bed rock have been upheaved into waves or folds. A single rock fold of this kind is shown in the picture. Often there

FOLDED ROCK LAYERS, MARYLAND.

are several folds side by side. The rock layers in the folds are often cracked and broken across, and the layers on one side of a crack, or *fault*, have slid up higher than the same layers on the other side, as shown at the top of the page. In the gradual formation of these faults, probably hundreds of earthquakes have occurred.

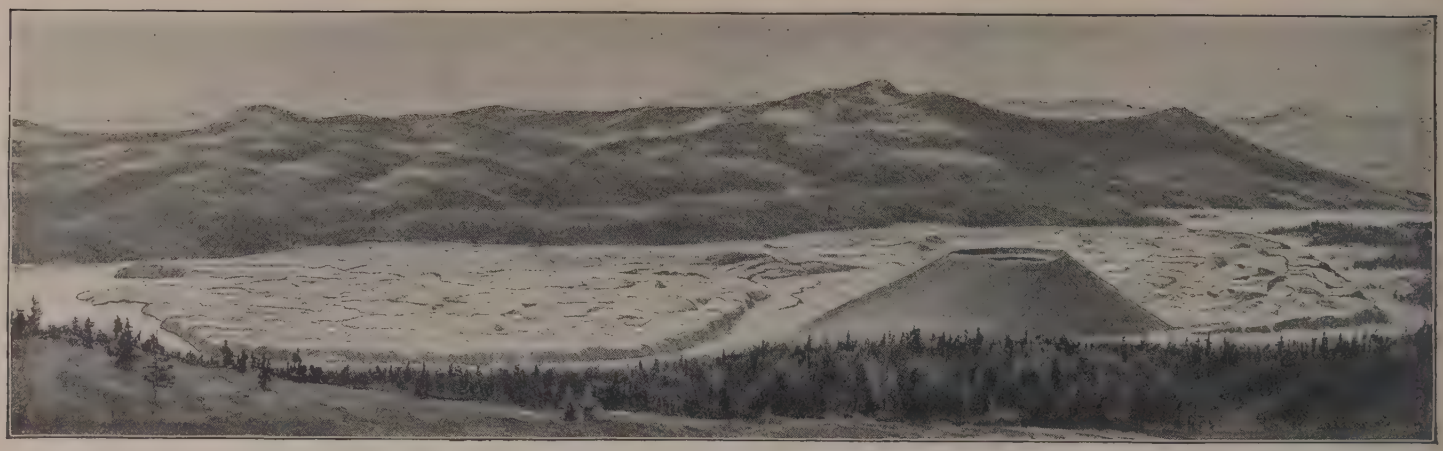
32. Mountains. Such disturbance of the rock layers is nearly always found in mountain regions, for *most mountains are the harder layers of these rock folds left projecting high above the surrounding country,* — the softer layers having been gradually worn off and washed away by the rain and the streams.

If the top of the fold has been worn away, the projecting layers of harder rocks in its two sides may form nearly parallel ranges of mountains, as in this diagram.



ILLUSTRATING PARALLEL RIDGES FORMED BY WORN ROCK FOLDS.

As there are often several folds side by side, mountains usually occur in roughly parallel ranges. A great region



A Little Volcano in California, showing an Old Outflow of Lava which by damming a Valley caused the Formation of Two Lakes.

of folded rocks may produce a series of ranges, forming a *mountain chain* or *system* several thousand miles long.

33. Volcanoes. At many places in the world, steam and white-hot melted rock, or *lava*, occasionally force their way out of the earth through cracks, or vents. Such vents are called *volcanoes*.

The lava which issues from the volcano cools and generally accumulates around the vent, forming a *volcanic mountain*, or *cone*. So the opening, or *crater*, of a volcano is usually near the top of a mountain peak.

Sometimes the lava issues quietly and flows in great streams over the surrounding country, where it cools into sheets of hard lava rock. Generally, however, there are terrific underground explosions of the steam, which hurl the melted lava high into the air, where it cools and falls over a wide region, as a rain of rock fragments.

These explosions are generally so violent that they jar the whole region about the volcano, and hence explosive eruptions are frequently accompanied by earthquakes.

After perhaps centuries of occasional activity, the eruptions of a volcano may cease entirely. The volcano is then said to be *extinct*.

Volcanoes are supposed to be one of the results of the upheaval or the sinking of the earth's surface. Lava is found in nearly every mountain region where the rocks are greatly disturbed, and most of the *active* volcanoes occur near the Pacific margin of the continental plateau. Volcanoes also occur far from the continental plateau on the sea bottom, where they build up huge cones, whose tops mark the location of oceanic islands.

Tests. What is a mountain? a range? a system? Define a volcano; its features.

Supplemental Work. Read in Baldwin's Readers, 5th year, about the destruction of Pompeii. Read chapter 43 in "Carpenter's Geographical Reader, Europe"; chapter 20 in "Carpenter's Geographical Reader, Australia."

TOPICS ON EFFECTS OF UPHEAVAL

I. Continental Plateau. Continents. Grand divisions. Continental islands.

II. Surface Movements. Results: on surface; on coast. Indications: earthquakes; volcanoes.

III. Surface Forms. Great highlands: location; shape; divisions. Slopes: short; long. Broad lowlands: location; extent.

WEARING AWAY OF THE LAND BY WEATHERING

34. Wearing away of the Land. We have learned that the gradual rising and sinking of the earth's surface have resulted in the upheaval of parts of the sea bottom to form land. But the surface of the land is constantly being worn away, and made lower, by the action of the weather and of water and ice. This wearing away of the land is called *erosion*.

Erosion goes on very slowly, bit by bit, but it goes on all the time. In the course of many years it hollows out deep valleys in the land, and wears away mountains which are composed of the hardest rock.

35. Rock Waste and Soil. When the surface of rock is warmed or cooled, as the weather changes, it expands or contracts slightly. This may break off larger or smaller pieces. Water freezing and expanding in rock crevices breaks off other pieces. Sand blown by the wind against rocks wears them slowly away. Rain water slowly dissolves the natural cement that binds together the harder particles of some rocks, and the rock then crumbles.

By such breaking up, or *weathering*, of the solid rock most of the land is kept covered with a layer of rock fragments, or *rock waste*. Near the surface this is usually quite fine and, when mixed with decaying animal or vegetable matter, forms the *soil*. At a slight depth the fragments are larger, while deeper still is the solid bed rock.

Sand Dunes, Columbia Valley, Oregon.

36. Movement of Rock Waste down the Slopes. The soil, sand, and rock fragments near the surface are gradually moved down the slopes of the land by the splash of rain drops, the expansion of water freezing in the soil, the movement of worms, the growth of roots, and the plowing of the soil by man. When this

movement uncovers the larger fragments of rock waste beneath, they too are weathered into smaller particles which, in turn, travel down the slope.

Thus the soil and rock waste are constantly moving down the slopes of the land, — more rapidly on steep than on gentle slopes. Therefore the soil is usually thicker on gentle slopes and on lowlands, than on steep slopes and on highlands.

37. Movement of Rock Waste by the Wind. Clouds of dust in the air are simply particles of rock waste being carried along by the wind. In dry regions where there is little vegetation, and on the sandy shores of lakes and the ocean, much fine rock waste or sand is thus transported by the wind, and often piled into ridges, called *sand dunes*.

Tests. Define erosion; rock waste; soil; dunes. How is rock waste formed? How are soil particles disturbed?

Supplemental Work. Observe at a road cutting, or newly dug cellar, the layers of soil, rock waste, and bed rock.

Read chapter 6 in "Carpenter's Geographical Reader, South America."

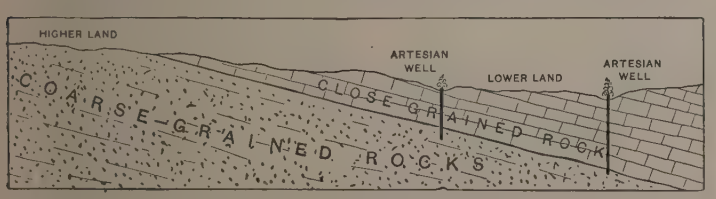
WEARING AWAY OF THE LAND BY GROUND WATER

38. Ground Water. Much of the rain that falls on the land sinks into the ground, passing through the rock waste and penetrating the bed rock beneath, often to a great depth. Even if the soil is dry at the surface, there is usually ground water at a slight depth. It is ground water that supplies all springs and wells.

39. Springs and Wells. The ground water makes its way very slowly through the earth from the higher to the lower lands, where it may flow out at the surface, forming a *spring*. Spring water is thus rain (or snow) which, in the form of ground water, has made a slow journey, often of many miles.

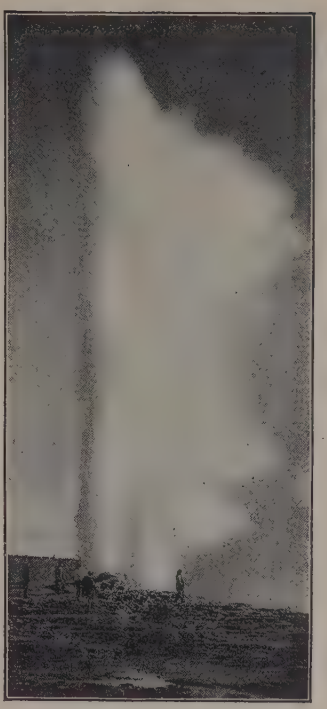
Some springs and wells dry up in a time of drought; and all of them would eventually dry up if the ground water from which they draw their supply were not frequently replenished by rain.

In some regions where the bed rock is too close-grained to allow the ground water to pass through it easily, water is obtained by driving a pipe well through the close-grained rock into some layer of coarse-grained rock beneath, which gets a supply of ground water from a higher region. The water rises in such *artesian wells* and sometimes overflows at the surface, forming an artificial spring. (See diagram.)



Illustrating Artesian Wells.

40. In some places *hot springs* occur. These draw their supply from ground water that is in contact with heated rock, often at a great depth. The water feeding some springs is so hot that as it nears the surface part of it, at short intervals, suddenly turns into steam and throws the rest high into the air. Such spouting hot springs are called *geysers*.



Old Faithful Geyser, Wyoming.

41. In passing through the small pores and crevices of the rocks, ground water is thoroughly filtered, and consequently the water of springs and wells is usually very clear. Though clear, it may contain much mineral matter, such as salt, sulphur, lime, or iron, which it has dissolved from the rocks through which it has passed. Such mineral spring water is frequently used for medicinal purposes.

42. Work of Ground Water. Some kinds of minerals, especially limestones, are easily dissolved by water. In regions where the bed rock is limestone the ground water often dissolves and carries away so much of it as to leave great underground cavities and galleries, perhaps many miles in extent. Most *caves* and *caverns*, nearly all of which occur in limestone regions, are caused in this way.

In time the roof falls in, and the cavern becomes an open valley. In some cases a section of the roof may remain standing for a time after the rest has fallen, thus forming a *natural bridge* across the valley.

43. Hot water, which dissolves all kinds of rock more readily than cold, usually brings to the surface a great deal of dissolved mineral matter. When hot water containing much mineral matter cools, part of this matter is deposited in solid form. Such mineral deposits are often found about hot springs. Sometimes they are highly colored and the deposits take various beautiful forms, such as basins and terraces, as shown in the picture.

Hot Spring Deposits, Yellowstone Park, Wyoming.

Tests. Define and explain the formation of a spring; an artesian well; a geyser; a mineral spring; a cave; a natural bridge.

Supplemental Work. Find out about the geysers of Yellowstone Park, and about Mammoth Cave or Luray Cavern.

STREAMS AND LAKES

44. Streams and Stream Systems. Nearly every spring is the beginning, or *source*, of a stream of water which flows from it. The source of a stream, however, may be a marsh, a mass of melting snow and ice, or simply the water from a passing shower.

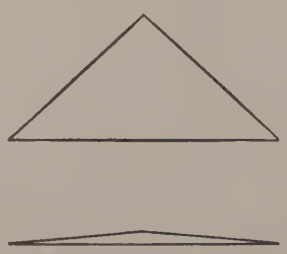
THE MISSISSIPPI RIVER SYSTEM.

Streams are usually quite small near their sources. They seek the lowest places in which to flow, usually the bottom of a valley. As they advance, several from either side of the valley unite, thus forming larger streams. The water from thousands of such side streams, called *branches* or *tributaries*, gradually swells the main stream until it may become a mighty river, which at length may flow into the sea.

A stream with all its branches, and all the smaller tributaries of each branch, is called a stream *system*.

45. Basins and Divides. All the region from which water in time of rain might flow into a stream is called the *drainage basin*, or *basin*, of that stream. Hence the basin of any stream includes the basins of all its branches.

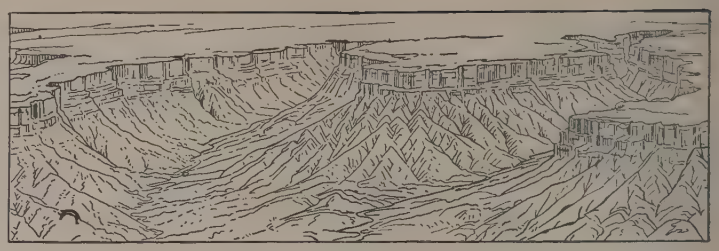
Any region from which the slope is downward in two opposite directions, is called a water parting, or *divide*, since it divides the water which flows down one side from that which flows down the other. The top of every range of hills and mountains is a divide, but so too is the crest of every low swell of land—from both the water flows away in opposite directions.



Adjacent stream basins are separated by divides.

46. Lakes. An obstruction or dam across a stream valley causes the stream to spread out, forming a *pond* or *lake*. The *inlets*, or streams flowing into a lake, must raise its surface until the water can escape over the obstruction before an *outlet* stream is formed, flowing from the lake.

47. Salt Lakes. From every moist surface, water is generally passing into the air as invisible vapor. By this process, called *evaporation*, considerable water is taken from the surface of streams and lakes, especially when the air is dry (§ 88, p. 22). In very dry regions lakes usually have no outlets, because evaporation prevents the water from rising high enough to flow over the obstruction.



ILLUSTRATING THE EROSION OF VALLEYS.

When a lake loses water by evaporation only, the dissolved mineral matter brought in by the inlets gradually accumulates until the lake water becomes very salt and bitter.

Rivers which flow into a very dry region may lose so much water by evaporation that they grow smaller as they advance, and finally may disappear entirely, leaving a coating of salt on the dry bed.

Tests. Define stream; source; branch; river; system; basin; divide; lake; inlet; outlet. Explain the formation of salt lakes.

Supplemental Work. After a rain, find in a road or street a little system of streams; sketch it; and model its basin.

WEARING AWAY OF THE LAND BY STREAMS

48. The Formation of Valleys. Notice the water flowing in a roadside ditch or street gutter, after a shower. It is very muddy. If a boy stands barefoot in such a ditch or gutter, he can feel little hard particles swept against his feet by the rush of the water. If a tumbler filled with muddy water is set aside for a few hours, the water becomes much clearer, while the particles of soil and sand which made it appear muddy settle to the bottom of the glass as a deposit of fine rock waste.

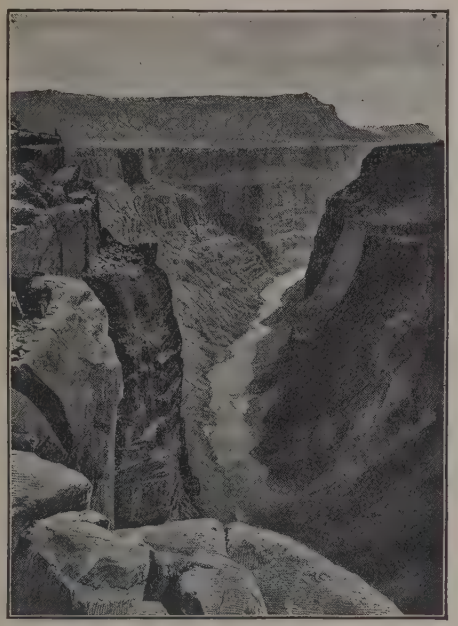
49. Much rock waste from the surface of the land near by is swept into every stream and carried along by its current; the amount so taken being greater in wet than in dry weather. As a result, the valleys of streams are slowly growing *wider*, and the intervening hills and uplands are slowly growing narrower and lower.

As the particles of rock waste are being carried along by the current, they strike against the bottom of the stream, loosen and detach other particles from it, and thus slowly wear the bottom away. The result is that the valley is slowly made *deeper*.

Although these processes are slow, they are constant and have been going on for a very long time. It is in this way that every valley in the world has been made, either wholly or in part, by the stream which flows along its bottom.

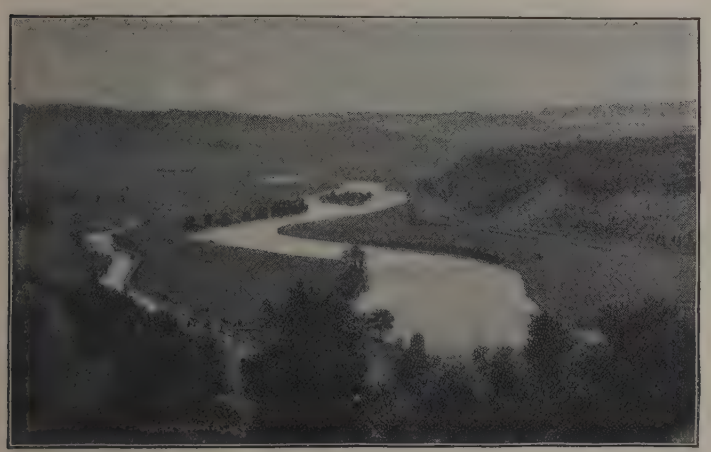
50. Narrow and Wide Valleys. A swift stream can wear away its bottom faster than a stream with a gentle current, because it can carry larger pieces of rock waste, and hit harder blows on its bottom.

In the uplands, near the sources of streams, because the slopes are steep and the streams swift, valley deepening is apt to go on more rapidly than valley widening, and the valleys are generally narrow, with steep side slopes. Very deep and narrow valleys are called *canyons*.



Grand Canyon of the Colorado River.

When streams reach the lower lands, they are larger and hence may carry along more rock waste; but the current is slower, the particles are smaller, and the cutting power is less. Here valley widening is apt to go on more rapidly than valley deepening, and the valleys generally are wide, with gentle side slopes. The word "valley" is often used to include the whole stream basin (§ 45).



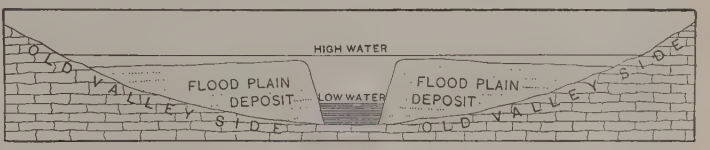
A Wide and Comparatively Shallow Valley, New York.

51. By the gradual deepening and widening of valleys, the intervening uplands may in time be carried away entirely, and a wide region, once hilly or mountainous, may be thus reduced to a nearly flat lowland.

52. **Flood Plains.** The rapid melting of snow or a great fall of rain in a stream basin causes the stream to rise, and perhaps to overflow its banks, producing a flood. At such times the stream carries much rock waste and the water is very muddy.

Near the middle of the stream the water is deep and the current is swift, but on the overflowed banks it is shallow, and the current is so slow that much of the rock waste sinks to the bottom. This deposit appears as a layer of *alluvium*, or *sediment*, along either bank, when the stream subsides to its ordinary width.

The next flood leaves another layer of sediment on top of the first, and the next flood still another layer.

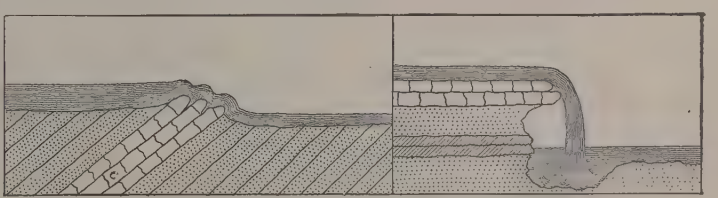


Illustrating Formation of Flood Plains.

Thus there is gradually built up by many floods a strip of "bottom land," or *flood plain*, on one or both sides of nearly every stream. Flood plains are usually larger near the mouth than near the source of a stream.

53. The flood plain, though nearly level, is often a little higher near the stream than along its outer edge, where sluggish streams, called *bayous*, are often found.

54. As the flood plain is composed of very fine particles of rock waste, it is usually very fertile, but it is subject to overflow, and is very easily undermined and washed away by the main stream in time of low water. For this reason a large stream in a wide flood plain is usually very crooked. Its course is a series of great bends, called *meanders* or *oxbow loops*, and is constantly changing as the current wears away one bank or the other.



Illustrating Rapids and Cascades. Illustrating Cataracts.

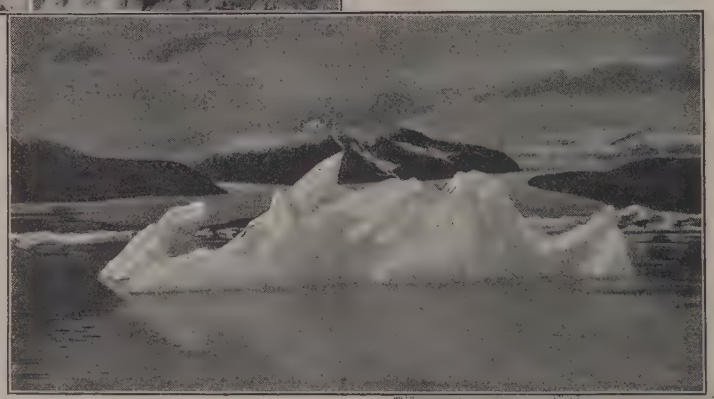
55. **Other Stream Features.** When a stream in cutting down its bed encounters a very hard layer of rock, the deepening of the valley above its edge is retarded, while the deepening of the valley below continues. Thus the stream makes a sharp descent at the edge of the hard layer, forming *rapids* or *cascades*, or perhaps a *cataract*.

A Small Cataract, Alabama.

56. Whenever the current of a stream carrying much rock waste is checked, part of the rock waste sinks to the bottom and forms a *bar*. Sand bars are thus formed at many places on the bed of a stream, but they are often washed away again when a flood increases the current and volume of the water.

57. When a stream carrying rock waste enters the sea or some other body of water in which there is little or no current, the rock waste sinks to the bottom, and the deposit is apt to accumulate until it reaches the surface of the water. There it gradually forms a fan-shaped tract of low, swampy land, called a *delta*, which divides the stream at its mouth into several channels. By the continued deposit of sediment at the mouth of each channel the delta is gradually enlarged and is often made very irregular in shape.

Muir Glacier, Alaska.



Iceberg near Coast of Alaska.

Tests. How are valleys deepened? widened? How are canyons made? Define and explain the formation of flood plains; bayous; oxbow loops; rapids; cascades and cataracts; sand bars; deltas.

Supplemental Work. Draw a section of a highland valley; of a lowland valley. Draw a diagram and explain why a ledge of hard rock across a stream retards the deepening of the valley above.

Read pp. 136–138, 153–156, and chapter 26 in "Carpenter's Geographical Reader, North America."

WEARING AWAY OF THE LAND BY GLACIERS

58. **Glaciers.** In the cold polar regions, and even in warm countries near the high summits of mountains (§ 81), more snow falls than is melted. It thus accumulates from year to year until it becomes so deep and heavy that the lower part is pressed into solid ice, and is forced to move slowly forward down the slope of the land. Such a thick sheet of slowly moving ice is a *glacier*.

In parts of the polar regions a continuous or *continental glacier*, hundreds of feet thick, covers the entire land surface and moves slowly downward into the sea, where great fragments break off and float away as *icebergs*. In warmer latitudes *valley glaciers* only are found. These occupy mountain valleys, and usually melt away before reaching the lowlands or the sea.

59. **Work of Glaciers.** The rock waste — sand, pebbles, and even large masses of rock — under a glacier becomes embedded in the ice and is dragged forward by the glacier, scratching, polishing, and wearing away the bed rock beneath. Rock waste also rolls down on the surface of valley glaciers from the mountain sides. Much of this finds its way to the bottom through the numerous deep cracks which are opened in the ice by the slow movement of the glacier. Thus glaciers rapidly wear away the rock surface over which they move, and carry forward an enormous quantity of rock waste.

If the glacier descends into the sea, the rock waste which it carries is borne away by icebergs. If the glacier does not reach the sea, the rock waste is deposited along its melting end, as an irregular sheet of sand, gravel, bowlders, and clay, called *glacial drift*, or as an irregular range of hills, called a *terminal moraine*.

60. **The Glacial Period.** In northern Europe and in North America as far south as the Ohio and Missouri rivers, the surface of the land is covered with glacial drift and the remains of terminal moraines. There are many rounded bowlders of a different kind of stone from any of the bed rock in the neighborhood, and many peculiar whaleback-shaped hills or *drumlins*, composed of glacial rock waste. The bed rock of these regions, where it can be examined, is covered with glacial scratches, and there are more lakes in these regions than in any other parts of the world. Some of these lakes occupy basins in the bed rock, but most of them occupy depressions in the irregular surface of the glacial drift, or old valleys across which a deposit of glacial drift forms a dam.

Bowlders deposited by an Old Valley Glacier in California.

These peculiarities indicate that long ago there was a *glacial period* of time, during which the northern hemisphere was colder than it is now.

Great continental glaciers covered northern North America and northern Europe. The American glacier moved out in all directions from the Laurentian Plateau (p. 36), and is therefore called the *Laurentian glacier*. The European glacier is called the *Scandinavian glacier*, because it moved out in all directions from the Scandinavian peninsula (p. 108). These glaciers must have lasted thousands of years, but when the climate became warmer they melted away and left the glacial deposits spread over the countries which the ice had covered.

Tests. Where and how are glaciers formed? What work is done by them? What is an iceberg? Define glacial drift; terminal moraine.

WEARING AWAY OF THE LAND BY WAVES AND TIDES

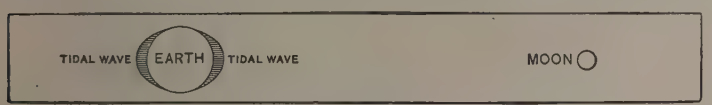
61. Waves. The surface of any sheet of water is thrown into waves by the wind. Light breezes cause mere ripples, but storm winds may heave the surface of deep water into billows as high as a three-story house.

Waves raised by a storm in one part of the sea spread rapidly to a great distance, but even big waves do not affect the water to any great depth.

When a wave enters shallow water, its lower part drags on the bottom, while the upper part, rushing onward, falls forward, forming a *breaker*. Big waves drag on the bottom in deeper water than little waves, and hence may break farther from the land.

62. Tides. At many places on the seacoast the water gradually rises for several hours and becomes many feet deeper; then for several hours it gradually falls to about its former level; then it again slowly rises, and so on. This slow and regular rise and fall of the sea is called the *tide*. The rise is *flood* tide, and the fall, *ebb* tide.

63. The tides are caused chiefly by the action of the moon, which, like the earth, possesses gravity, or the



power to pull loose objects toward itself. The moon's gravity causes the surface of the sea to rise in two low but broad tidal swells, or waves, one on each side of the earth.

As the earth rotates, these waves travel over the surface of the sea. When the crest of one of these waves reaches the coast, it is high tide at that place; when the

trough between the waves reaches the coast, it is low tide. About twelve and a half hours intervene between one high tide and the next.

64. Unlike wind waves, the tidal waves cause powerful currents which extend to the very bottom of the sea.

In the open sea the tidal wave is low and imperceptible, but as it advances between the headlands of a coast, the approaching shores and the shallowing water force the wave to become much higher. At the heads of some narrowing bays it is as much as 50 or 60 feet

High and Rocky Coast, Maine.

high; on more open coasts heights of from 6 to 12 feet are usual.

High tide rushes rapidly up some estuaries and river mouths in the form of a breaker called a *bore*, which is dangerous to shipping.

65. Work of Waves and Tides. Waves dash upon the coast at times with great force. If the shore is high and rocky, fragments of loosened rock are picked up and hurled against the cliffs, thus loosening other fragments, and undermining and rapidly cutting back the front of the cliffs. The fragments, pounded against the cliffs, or rolled backward and forward upon one another, are worn away, first to pebbles and then to fine sand.

Much of the sand made in this way on rocky headlands is carried by tidal currents and by the wash of the waves into sheltered coves, or to straight stretches of low and gently sloping coast, where it is thrown upon the shore to form a smooth, sandy *beach*.

Thus the waves and tidal currents are constantly wearing back the rocky headlands, and building out the intervening coves — thus making the coast line more regular.

66. In some places great storm waves breaking at some distance from the shore, and depositing sand in the water, gradually build up a long, low island, or *barrier beach*, parallel with the shore. Between this beach and the mainland a *lagoon* of shallow water is inclosed. In other places, where opposing currents leave still water between them, sediment from both

Smooth and Sandy Beach, Maine.

currents is deposited, forming low, sandy *capes*, *spits*, or *sandy hooks* extending out from the shore.

67. **Coral Reefs and Islands.** Where the sea water is warm, clear, and not too deep, and where currents bring plenty of food, little animals called *coral polyps* live in great colonies attached to the sea bottom. When the animals die, their stony skeletons, composed of lime extracted from the water, remain, and to these skeletons other polyps of the same kind become attached. Thus by the growth and death of countless polyps the rocky base on which they grew may gradually be built up to the surface of the sea, forming a low island, or *coral reef*. A coral island often has the form of a ring of land, surrounding a shallow lagoon; it is then called an *atoll*.

Tests. Define and explain waves; breakers; tides; flood tide; high tide; ebb tide; low tide; a bore; a barrier beach; a sandy hook; a coral reef.

GREAT BARRIER CORAL REEF, AUSTRALIA.

THE ROCKY LAYERS OF THE LAND

68. **What becomes of the Rock Waste.** We have now learned that the weather and moving water and ice are constantly at work wearing away the land and carrying the rock waste down the slopes.

In time, much of this rock waste reaches the sea, where it is deposited as sediment. The heavier material (gravel and sand) sinks soonest and forms a layer of coarse sediment near the shore, while the finer particles are carried farther out before they too sink and form a layer of mud or clay.

Nearly all the rock waste brought down to the sea is deposited within a few hundred miles of the coast, and with it are mixed the bones of animals washed from the land, or of sea animals. Farther from land almost all the deposits are the shells of sea animals. Of these there are millions; and although most of them are very tiny, they make, in some regions, a thick layer of slime, or *ooze*, on the deep sea floor.

69. Continued additions make the deposits thicker each year, until the lower layers are pressed into stone. In these layers of sediment the forms of the shells and bones are frequently preserved as *fossils*. The sandy deposits near the shore become layers of sandstone; the deposits of mud and clay become layers of shale or soapstone; and the oozes become different kinds of limestone and chalk, which are often little more than masses of fossils.

FOSSILIFEROUS LIMESTONE.

70. By gradual upheaval these layers of hardened sediments on the sea bottom become land, and by the pressure and heat produced in the upheaval they may be hardened, crystallized, and changed still further — limestone becoming marble; sandstone, quartzite; and shale, slate. Some of the more deeply buried layers may even be melted and changed to granite or to lava. In this way have been formed nearly all the rocky layers of the land.

71. **Peat and Coal.** In some places simple forms of plants grow thickly on the surface of fresh water near the shores of shallow ponds and lakes. They may in time cover the entire surface of the water with a floating mat of vegetation, and this, growing on top but dying beneath, may eventually fill the lake with a dark mudlike mass called *muck* or *peat*, the whole forming a peat swamp, or *bog*. When thoroughly dried, peat may be used for fuel.

Thousands of years ago great swamps, somewhat like the present peat bogs, but containing a vastly more luxuriant vegetation, existed in many lowlands. After their formation they were depressed below the sea and were covered by layers of mud and sand. The sediment gradually hardened to layers of rock, and the peat to beds of the black stonelike substance which we call *coal*. In the later upheaval of these beds some of them were further changed into *hard* or *anthracite* coal.

72. **Petroleum and Natural Gas.** Vegetable or animal matter which ages ago was deeply buried under sediments, has sometimes been gradually changed, not into coal, but into *rock oil*, or *petroleum*, and into *natural gas*. Both of these substances, like coal, make good fuel. They are obtained by boring deep wells through the overlying layers of rock.

Tests. How does the ocean deposit near the shore differ from the deep sea deposit? Explain the formation of sandstone; shale; limestone. Of peat; coal. Of petroleum; natural gas.

Supplemental Work. Bring to school specimens of several kinds of rock and of several kinds of coal. Label each specimen, and keep the collection in the schoolroom.

Read pp. 211–214 in "Carpenter's Geographical Reader, North America."

TOPICS ON WEARING AWAY OF THE LAND

I. Erosion. Definition. Work of wind. Ground water: source; uses; erosive work. Streams: source; deepening work; broadening work. Glaciers: source; motion; erosive work. Work of waves.

II. Transportation. Wind. Water. Ice. Direction.

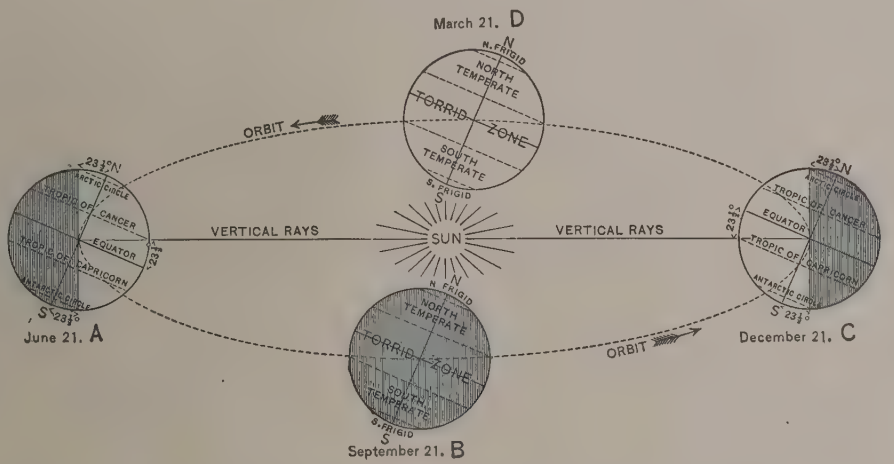
III. Deposits. Dunes. Stream deposits: sand bars; flood plains; deltas. Spring deposits. Glacial drift. Shore deposits: beaches; sandy hooks; coral reefs. The layers of rocks of mineral origin; of animal or vegetable origin.

IV. Features of Surface Waters. Springs: origin; classes; uses. Streams: source; divides; flood plains; falls (cataracts); meanders; bayous; mouths. Lakes: origin; inlets; outlets; classes. Glaciers: regions; classes.

REVOLUTION OF THE EARTH

73. Revolution. The earth, in addition to the rotation on its axis once every twenty-four hours, has another motion, called *revolution*, which carries it around the sun in a nearly circular path, or *orbit*. The time required by the earth to revolve completely around the sun is called a *year*.

74. Inclination of the Axis. As the earth revolves, the axis always points in nearly the same direction (toward the North Star, p. 6). The axis is not perpendicular to the orbit; it leans, or inclines, about $23\frac{1}{2}°$ from the perpendicular, as shown in the diagram.



75. The Seasons. When, in June, the earth is at the point in the orbit represented at *A* in the diagram, it is seen that, owing to the inclination of the axis, the north pole lies $23\frac{1}{2}°$ within the lighted half of the earth, while the south pole lies $23\frac{1}{2}°$ within the dark side; and that the northern hemisphere receives more of the sun's rays than the southern hemisphere receives. Hence the northern hemisphere must then be warmer than the southern, and we say the season of *summer* prevails in the northern hemisphere, but *winter* prevails in the southern hemisphere.

Six months later, in December, when the earth reaches the position *C* in the orbit, it will be seen that the north pole is then in the dark half, and the south pole in the lighted half of the earth. The southern hemisphere then receives the most heat, and has its summer while the northern hemisphere has winter.

In March or September, when the earth is at *D* or *B*, the sun's rays reach both poles, and the northern and southern hemispheres each receive the same amount of sunshine. Each hemisphere is then cooler than in summer, but warmer than in winter. It is then the season of *spring* on one side of the equator, and the season of *autumn*, or *fall*, on the other side.

76. Varying Lengths of Days and Nights. The points *B* and *D* in the orbit are called *equinoxes* (equal nights); for when, in September and March, the earth is at these points, the ends of the axis are on the line which divides the light half from the dark half of the earth, and rotation in this position produces days and nights of equal length all over the earth.

At all other points in the orbit the days and nights are unequal in length (except on the equator), the inequality being greatest in June and December, when the earth is at the points *A* and *C* (called *solstices*). At these times the days and nights are still equal in length on the equator, but unequal elsewhere, the inequality increasing rapidly as one advances from the equator toward either pole. Thus in the hemisphere having summer, the days are 14 hours long (nights 10) in latitude 31°; 16 hours long in latitude 49°; 20 hours long in latitude 63°; and on the parallel $23\frac{1}{2}°$ from the pole there is continuous daylight for 24 hours. Still nearer the pole continuous daylight lasts longer and longer, and at the pole it lasts for six months.

In the hemisphere having winter, the conditions are just reversed; the nights are longer than the days, and near the pole the sun does not rise at all for weeks or months.

77. Tropics and Polar Circles. When the earth is at *B* or *D*, the sun is directly (vertically) overhead at the equator, and its rays just reach both poles. When the earth is at *A* or *C*, however, the sun's rays extend $23\frac{1}{2}°$ beyond one pole and fall short of the other pole by $23\frac{1}{2}°$, while the vertical rays fall on places $23\frac{1}{2}°$ north or south of the equator. Special names are given to the parallels reached by these rays of the sun at these times. The parallels $23\frac{1}{2}°$ north and south of the equator are called *tropics*. The northern one is the *Tropic of Cancer*, and the southern, the *Tropic of Capricorn*. The parallels $23\frac{1}{2}°$ from the poles are called *polar circles*: the northern, the *Arctic Circle*, and the southern, the *Antarctic Circle*.

78. Astronomical Zones. The tropics and polar circles divide the earth's surface into five *astronomical zones*, — a *torrid* zone, two *frigid* zones and two *temperate* zones.

The *torrid zone* lies between the tropics. It includes all parts of the earth on which the sun's rays are ever vertical. It is thus warmer, as a whole, than the other

zones. Half the zone is always in sunlight, and the days and nights are always of nearly equal length. No part of the year is either much warmer or much cooler than any other part.

Two *frigid zones*, one about either pole, are inclosed by the polar circles. These zones include all parts of the earth where, during the year, continuous daylight or continuous darkness lasts for 24 hours or more. They are the coldest of the zones, for in summer the sun never rises high above the horizon, and during much of the winter it does not rise at all.

A *temperate zone* lies between the torrid zone and each frigid zone. In the temperate zones there is a period of daylight and a period of darkness every 24 hours, but the noticeably long days in summer and long nights in winter cause warm summers and cold winters.

Tests. Define the earth's revolution; the orbit; the inclination of the axis. Explain the cause of the seasons; of the varying length of days and nights. How are the astronomical zones determined and characterized?

Supplemental Work. By means of a lamp and a globe or a ball, illustrate the position of the earth at the equinoxes; on June 21; on December 21.

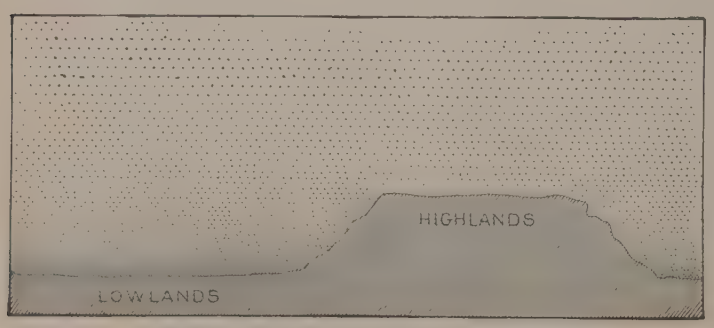
Read chapter 18 in "Carpenter's Geographical Reader, Europe."

THE TEMPERATURE ZONES

79. Temperature Zones. The true heat belts, or *temperature zones*, are not fixed and regular like the astronomical zones. They shift northward and southward with the changing seasons. Moreover, they have quite irregular boundaries. This is caused chiefly (1) by the irregular distribution of land and water over the earth, and (2) by the differences in elevation of the land.

80. When exposed to the sun's heat, land becomes warm much quicker than water does; and when warm it cools quicker than water. Hence in latitudes where the summers and winters are well marked, the land becomes warmer in summer and colder in winter than the sea in the same latitude.

81. The great body of air which surrounds the earth and extends upward to an unknown distance from its surface, is called the *atmosphere*. The upper part of the atmosphere, resting on the part beneath, compresses it and makes it *denser*. Therefore the atmosphere is densest at the surface of the sea; but on high mountain tops it is so thin, or *rare*, that it is but slightly warmed by the sun in the daytime, while at night it permits the heat of the sun-warmed ground to escape. The air on the lowlands, however, is so dense that it is warmed by the sun in the daytime, and also helps to keep the ground warm at night. It thus happens that the prevailing weather, or *climate*, of lowlands is warmer than that of highlands. Thus even near the equator, where snow is unknown in the lowlands, the tops of high mountains bear snow banks that are never entirely melted away.



ILLUSTRATING COMPARATIVE DENSITY OF THE AIR.

But it must not be supposed that a person living on the top of a mountain would be always cold. For the very reason that the thin air can not take much heat from the sun's rays, the sunshine itself is hotter than on lowlands; but at night, or in the shade, the weather is cold.

82. Boundaries of the Heat Belts. The heat belts in July (when they are farthest north) and in January (when they are farthest south) are shown on the opposite maps. Each boundary line is an *isotherm;* that is, a line passing through places having the same temperature. The boundary of the cold belt has about the temperature of freezing water (30°); that of the hot belt has the comfortable temperature of a sitting room (70°).

In July, when the sun rises high over the northern hemisphere, and the summer days are long, the heat in the great land masses of North America and Eurasia is so great that the *heat equator* (line of greatest heat) and the hot belt extend far north of the tropic. It will be noticed also that at this season the heat equator lies but little north of the true equator over the cooler oceans, and that the temperate belt extends to the north pole. As July is in the winter of the southern hemisphere, the hot belt does not extend to the tropic in that hemisphere, nor the temperate belt to the polar circle. As the surface of the southern hemisphere is mostly water, the boundaries of its heat belts are comparatively regular.

Compare the January positions of the heat equator and the heat belts with their July positions. Explain the differences in position.

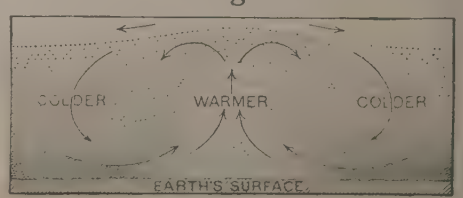
In the lowest pair of maps the boundaries of the heat belts in both January and July are drawn, in order to show the temperature changes of each region during the whole year. It thus appears that different parts of the earth have well-defined temperature conditions. Certain regions are always hot; other parts have a temperate winter and a hot summer; others again are always temperate. Some regions have a temperate summer and a cold winter; some have a hot summer and a cold winter; and in some the weather is always cold.

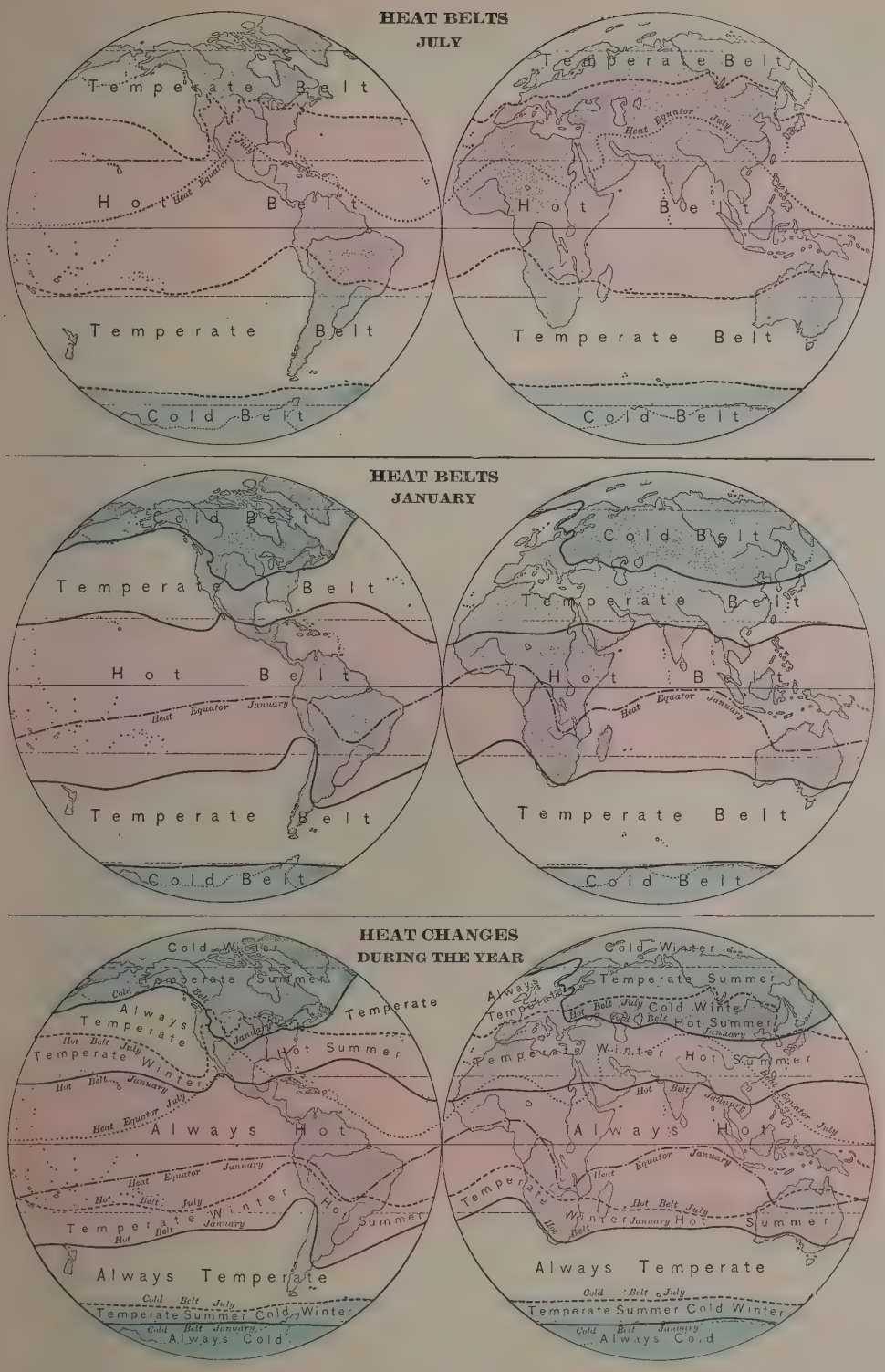
Tests. Define rare; dense; isotherm. How do the true heat belts differ from the astronomical zones, and why?

Supplemental Work. Draw maps of the hemispheres, showing the tropics, polar circles, and true heat belts in July and in January.

WINDS

83. Cause of Winds. When air is heated, it expands and becomes lighter, bulk for bulk, than cooler air. This helps to explain why the smoke from a fire *rises*. The heat expands the air over the fire and makes it lighter than an equal bulk of the cooler surrounding air. The cooler and heavier air, therefore, flows in below and pushes the lighter air upward, but is quickly warmed and is





itself pushed upward by the following cooler and heavier air. Thus over the fire there results an ascending current of air which carries the smoke upward. The rising current of warm air is fed below by currents of cooler air from the sides, while the ascending air gradually cools and spreads out above; the general movement being as indicated in the diagram.

When from any cause the air over a region becomes warmer than that over the surrounding regions, an ascending current is formed much like that over a fire. The surface currents of cooler and heavier air are called *winds*.

84. Trade Winds. Near the heat equator the air is always warmer and lighter than the air nearer the poles; hence there are nearly constant winds blowing toward the heat equator from some distance on both sides. These winds are called *trade winds*. They are gentle winds, which over the level surface of the open ocean blow steadily throughout the year in nearly the same direction. Over the uneven surface of the land they are not so steady.

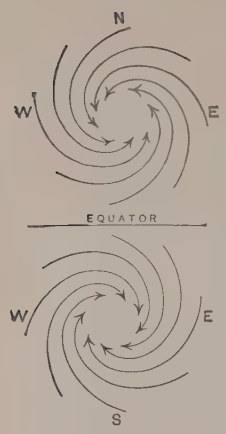
Because of the rotation of the earth, moving air turns out of a straight course as it advances, turning to the right north of the equator, but to the left south of the equator. The trade winds, therefore, approach the heat equator from the northeast in the northern hemisphere, and from the southeast in the southern.

85. Belts of Calms. The northeast and southeast trade winds, when they meet, are forced slowly upward by the cooler and heavier air behind. The place of meeting is therefore marked by a narrow region of light, fiftul breezes or of calms, called the belt of *equatorial calms*.

At the outer edge of the trade winds, in both the northern and the southern hemisphere, is a narrow belt of *tropical calms* in which the air is slowly settling down from the upper atmosphere.

86. Prevailing Westerly Winds. Beyond the tropical calms the general movement of the atmosphere is toward the poles—from the southwest in the northern hemisphere, and from the northwest in the southern hemisphere.

The winds of these regions, though most frequently from a westerly quarter, are unlike the trade winds in being exceedingly variable in direction. They frequently form into vast whirls, which are called *cyclones*, in the center of which the air is rising. Cyclones are often hundreds of miles in diameter. They move eastward with the general drift of the atmosphere, often for great distances, before dying out. Nearly all the ordinary storms in the temperate zones are cyclones.

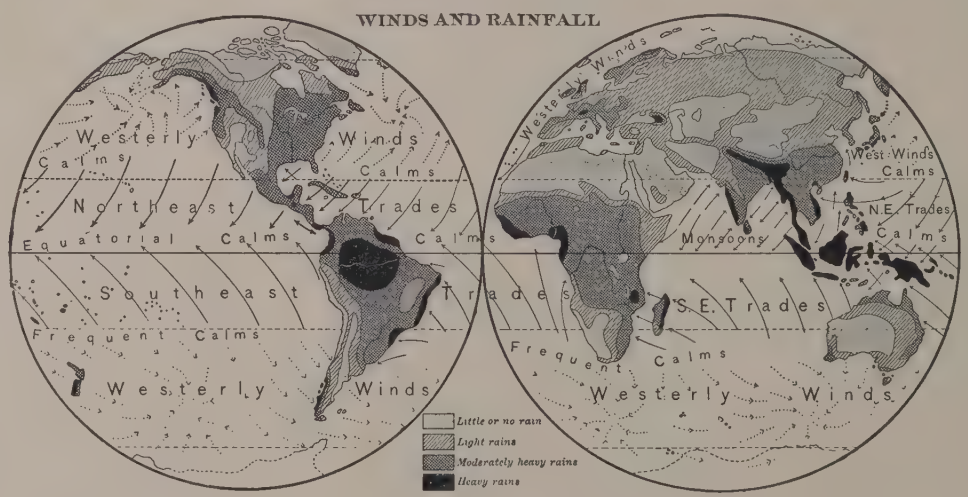


Because of the earth's rotation, cyclones on the same side of the equator always whirl in the one direction, but on the other side of the equator they whirl in the opposite direction, as shown in the diagram.

In the belt of prevailing westerly winds the land is warmer or cooler than the sea, according to the season. Hence these winds reach the west coasts of the continents as warm winds in winter, but as cool winds in summer. For this reason the west coasts of North America and Eurasia in this belt have warmer winters and cooler summers than the east coasts.

87. Monsoon Winds. The maps on p. 21 indicate that the heat equator shifts far northward and southward during the year. The equatorial calm belt shifts with it, but not so far. Still there are parts of the torrid zone which lie far south of these calms in July, but north of them in January. As the winds blow obliquely toward these calms, it follows that in these parts of the torrid zone the winds blow from one direction in summer and from another in winter. This is very noticeable on the northern Indian Ocean and its coasts, where the seasonal winds are called *monsoons*, from a word meaning "season." In these regions the regular northeast trades prevail in winter, while in summer a monsoon wind blows from the southwest, south, or southeast.

Tests. Explain the cause of winds. Define and describe the trade winds; the calm belts; the prevailing westerlies; cyclones; monsoons.



RAINFALL

88. Moisture in the Air. From every moist surface, but mostly from the extensive surface of the sea, water is nearly always evaporating, or rising into the atmosphere in the form of invisible *vapor* (§ 47). More water usually evaporates when the water and air are warm, than when they are cold. The vapor, mingled with the air, is carried about by the winds, and thus much of that from the sea is brought over the land. When water evaporates, its impurities are left behind; thus although the water of the sea is salt, the vapor from it is fresh and pure.

89. Clouds, Rain, and Snow. When vapor-laden air is chilled, part of its invisible vapor condenses into countless tiny water drops or ice crystals, forming a *fog* or a *cloud*. If the vapor is chilled by coming into contact with cold vegetation, we find on the foliage drops of *dew*, or ice crystals of *hoarfrost*. If the air about a cloud grows warmer, the tiny cloud drops or crystals may evaporate and disappear, but if it continues cool, they may unite into larger drops and fall to the earth as *rain*, or into flakes which may fall as *snow*.

Thus cloud, rain, and snow are formed by the *chilling* of the invisible vapor in the air. The vapor may be chilled either by rising higher in the atmosphere, or by being carried by the winds northward or southward into cooler latitudes.

90. Rainfall of the Torrid Zone. As the trade winds advance over the oceans they grow warmer, and are nearly filled with vapor when they reach the equatorial calms. Here the air rises; its vapor is chilled, and condenses into the clouds and the heavy daily rains for which the equatorial calms are noted. Over the Atlantic and Pacific oceans this rainy calm belt remains near the equator; but over the continents it shifts north and south with the seasons through nearly the entire width of the torrid zone, and, as it passes, it gives a period of ample rains to the greater part of the land surface in that zone. In the southern part of the zone the rainy season occurs in the January half of the year; but in the northern part, in the July half. In the central parts of the zone there are apt to be two rainy seasons in the year — one when the rain belt sweeps northward in our spring, and another as it sweeps southward in our fall.

91. Where vapor-bearing winds, either in the torrid zone or elsewhere, are forced to rise over highlands, the vapor is chilled, and rainfall results on the windward side of the highland, while the region beyond the highland may receive but little rain.

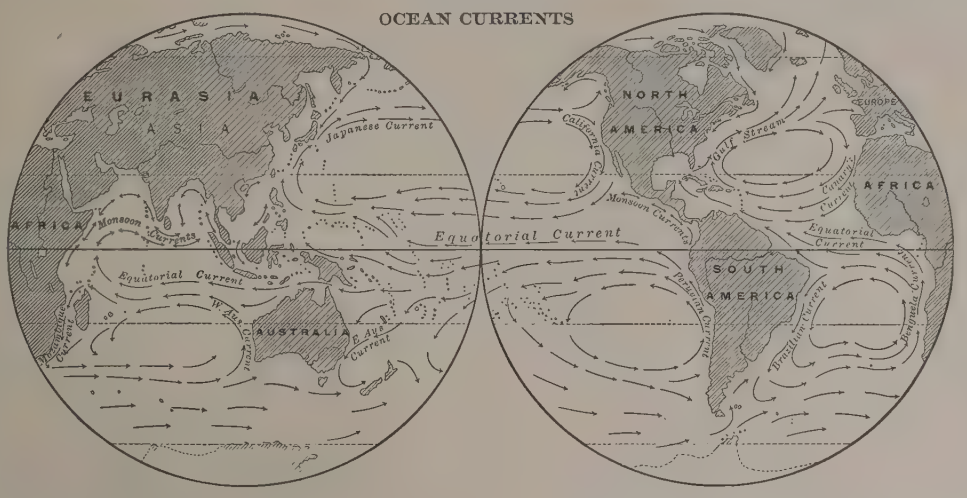
92. Rainfall of the Temperate Zones. The prevailing winds of the temperate zones blow toward colder latitudes. They start from the tropical calms as dry winds, and as they cool quite slowly they do not yield much rain until they are chilled either by rising in cyclones (§ 86) or by rising over highlands. Thus highlands and cyclones are the rain producers of the temperate zones. The temperate zones in general have less rainfall than the torrid zone.

93. Rainless Regions. Near the tropics in each of the grand divisions are regions in which there is little or no rain. Most of these lie for part of the year in the belt of tropical calms, where the air is descending and growing warmer, and hence its vapor is not condensed into clouds and rain. During the rest of the year highlands to windward rob the wind of its moisture before it reaches these regions (§ 91).

Compare the maps on pp. 21 and 22 and see if you can explain the general distribution of rainfall on the land surface.

Tests. Explain clouds; rain and snow. Explain the general distribution of rainfall in the torrid zone; in the temperate zones. Give effects of highlands on rain distribution.

OCEAN CURRENTS



OCEAN CURRENTS

94. Cause. In nearly all parts of the sea there are slow movements, or *currents*, of the surface water. The currents move in the general directions of the prevailing winds, and are believed to be caused chiefly by them.

95. General Circulation. The trade winds drive the equatorial waters of all the oceans westward against the continents, where the currents turn north and south into the regions of the prevailing westerly winds. In these latitudes the currents are driven eastward across the ocean, and then a part of their water is turned toward the equator and completes the circuit, as shown on the map. Thus on each side of the equator, in both the Atlantic and the Pacific ocean, the water is thrown into a great whirl or eddy around the region of tropical calms.

A branch of the north Atlantic eddy follows the coast of Europe into the Arctic Ocean and sweeps around its basin, returning southward near Greenland.

In the Indian Ocean, there is a great eddy south of the equator, similar to those in the south Atlantic and Pacific oceans; but north of the equator the currents of the Indian Ocean move generally eastward during half of the year, and generally westward during the other half, changing as the monsoon winds change their direction.

96. Temperature. Wherever the ocean eddies move *from* the equator, their water is warmer than that of the surrounding ocean, and that part of the whirl is called a *warm* current; but that part of the whirl which moves *toward* the equator is a *cold* current, because it is cooler than the surrounding water.

Currents affect the climate of the neighboring coasts chiefly by warming or cooling the winds which blow from them to the coasts. Warm currents keep the shores against which they flow free from ice.

97. Names of Currents. Various parts of these great surface eddies of the oceans have special names, which are printed on the map below. What is the part of each great eddy called which moves west near the equator? What is the name of the north Atlantic current north of the West Indies? This is so called because part of it appears to flow out of the Gulf of Mexico between Florida and Cuba (p. 36). The narrowness of this channel makes the Gulf Stream here one of the most rapid of the ocean currents. Is it a warm or a cold current? What is the corresponding part of the north Pacific eddy flowing past the Japanese Islands called? Its Japanese name is *Kuroshiwo*, or "Black Stream." Is it a warm or a cold current? What is the eastern part of the whirl in the north Pacific called? the eastern part of the south Pacific whirl? Are these warm or cool currents?

Tests. Name, describe, and explain the chief currents of the Atlantic Ocean; the Pacific; the Indian; the Arctic. Explain the effect of ocean currents upon climate.

Supplemental Work. Using the maps on p. 21, write a comparison of the climates of the eastern and western shores of the northern Pacific.

TOPICS ON DISTRIBUTION OF HEAT AND MOISTURE

I. HEAT. Day and night: cause; differences in length. Seasons: causes; names; times. Astronomical zones: boundaries; names. Heat belts; how and why they differ from the zones.

II. RAIN. Cause. Influence of winds: trade winds; prevailing westerlies; calms — equatorial, tropical; cyclones; monsoons. Influence of seasons. Effect of mountains.

PLANTS AND ANIMALS

98. General Distribution. Plants and animals are found in nearly all parts of the world, but they are most abundant in warm, moist equatorial lowlands. From these regions there is an irregular but gradual decrease in life forms toward the cold polar regions, and also toward the cold summits of high mountain ranges. The map on p. 24 shows the great vegetation regions.

99. Forests. In equatorial regions where the rainfall is abundant, forest vegetation is wonderfully dense

and luxuriant. The great trees stand close together, and are often covered and interlaced with hundreds of climbing vines and air plants. As there is no cold season, vegetation grows throughout the year and is always green.

In the temperate zones, with less heat and rainfall, the forest vegetation is less dense and luxuriant than that in the torrid zone. Only those plants whose fruit ripens during the warm season can live in the temperate zones. In the cold season they stop growing or die. The animals of these zones grow heavier coats of hair, fur, or feathers in winter than in summer. Some of them lie dormant or asleep in sheltered places throughout the cold season.

Dense Forest.

100. Grassy Lands. In both torrid and temperate zones where the rainfall is too light or too unevenly distributed through the year for the growth of forests, it may yet be sufficient for a growth of grass, shrubs, and other low plants. In such places are found open grassy lands. These are called *prairies*, *steppes*, *llanos*, and *pampas*, in different parts of the world.

101. Tundras. In the frigid zones it is so cold that few kinds of plants and animals can live. The soil is frozen to a great depth; only the surface thaws, even in midsummer. When the thaw occurs, a wide strip of country along the Arctic coast of America and Eurasia is converted into great swamps, called *tundras*.

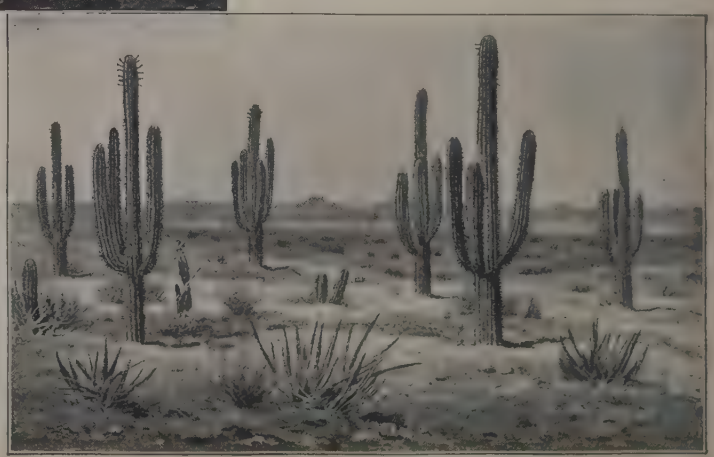
Though some kinds of flowering plants are occasionally found in the frigid zones, the vegetation consists chiefly of mosses and lichens and a few dwarfed trees. Most of the animals have coats of thick fur or coverings of fat to keep them warm.

102. Deserts. A very dry region, even if it is warm, can have little or no vegetation. Such a region is a *desert*. Compare the rainless regions, on the rain map, with the deserts on the vegetation map.

The few plants of deserts are peculiarly adapted for a dry climate, having hard, close bark and small leaves through which their juices can not evaporate easily. Many, like the cactus, are armed with thorns which prevent animals from breaking the sap-preserving bark.

103. Barriers. Animals are free to roam, birds to fly, and the seeds of plants are scattered far and wide by winds, currents, and animals; yet, sooner or later, both animals and seeds are likely to reach a region in which they are unfitted to live, and which thus acts as a natural *barrier* to their further diffusion.

104. Great Life Regions. The oceans which separate the continents, and the vast deserts, and very lofty mountain ranges are important barriers to the spread of animals and plants. They mark the division of the continental lands into the six great life regions shown on the map opposite. Each of these regions has many kinds of plants and



The Giant Cactus.

animals not found elsewhere, although different regions also have some kinds in common.

In the several transitional areas are found life forms resembling some of those in the neighboring regions, but strangely changed and adapted to fit them to their dry surroundings.

Supplemental Work. Read "How Plants Travel" in Johonnot's "Glimpses of the Animate World"; "Migration of Birds" in Lockwood's "Animal Memoirs," Part II.; Dana's "Plants and their Children."

THE AUSTRALIAN AND SOUTH AMERICAN REGIONS

105. The Australian Region is the most peculiar of the life regions. Nearly all of the native four-footed animals either are hatched from eggs or are so helpless at birth that for some time they are carried in a pouch or fold of skin on the breast of the mother.

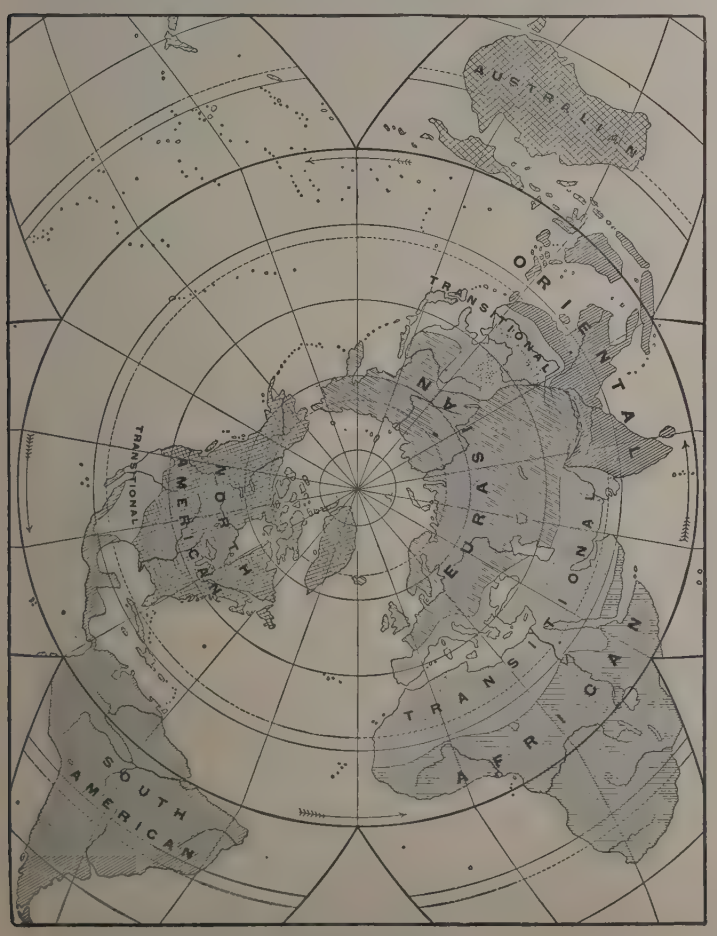
There are many kinds of such pouched animals: many are of the kangaroo type; some are like small bears, as the koala, which is about the size of a poodle dog; still others are somewhat like squirrels, rabbits, rats, mice, or moles in size and habits. The kangaroos have short, weak fore legs and long, stout hind legs, upon which they squat upright and with which they leap over the ground. The largest kangaroo, when sitting upright, is as tall as a man, but some kinds are as small as rats.

SOME ANIMALS OF THE AUSTRALIAN REGION.

The other animals are almost equally peculiar, including the duckbill, which lays eggs, has a bill like a duck's, four webbed feet, and fur like a mole's; large running birds, as the emu, cassowary, and kiwi; and bower birds, which build covered playgrounds or bowers, and decorate them with shells or colored stones.

Among the more peculiar plants are the leafless oak, and flowering but leafless acacia trees. Still more interesting are the eucalyptus trees, some of which are among the tallest trees in the world. On many Australian trees the leaves grow with their edges toward the sun.

During the last century white men have carried to Australia sheep, cattle, rabbits, and other kinds of animals. These have multiplied wonderfully, showing that other than pouched animals might have lived in this region had not some barrier prevented them from reaching it. The fact that the native animals and plants of Australia are so very peculiar is thought to indicate that Australia has been separated from Eurasia ever since a very early period in the world's history.



LIFE REGIONS.

106. The South American Region has a greater variety of life forms than any other region, and, next to the Australian, is the most peculiar. It is the home of many kinds of opossums, which are pouched animals, like those of Australia.

Other peculiar animals are the sloth, which spends most of its life hanging by its long curved claws from the branch of a tree; the ant-eater, which obtains its food by thrusting its long, sticky tongue into an ants' nest; and the armadillo, which is covered with a flexible horny armor. This region is the home of the guinea pig, the tapir, the long-tailed monkey, the piglike peccary, and the jaguar, or American tiger. Several kinds of llamas live in the western highland and the southern lowlands.

SOME ANIMALS OF THE SOUTH AMERICAN REGION.

Among the birds are beautiful parrots, the condor, — the largest of flying birds, — and the ostrich-like rhea.

The plants include mahogany, rosewood, logwood, and cinchona or Peruvian-bark trees; plants yielding India rubber, the vanilla bean, and useful gums. Cayenne pepper, the potato, the tomato, tobacco, and Indian corn are native in this region, but the coffee tree, sugar cane, and wheat were carried to South America by man.

The difference in life forms between South America and North America indicates that these two grand divisions have not always been connected with each other.

Supplemental Work. Bring to school a picture or a description of one Australian and one South American plant or animal.

Read chapter 6 in "Carpenter's Geographical Reader, Australia," and pp. 75–76, 92–94, 140–142, 199, 239–241, 243–244, 320–324, "Carpenter's South America."

THE AFRICAN AND ORIENTAL REGIONS

107. The African Region is specially noted for the great number of its flesh-eating animals — lions, leopards, panthers, hyenas, and jackals — and for its hoofed animals, such as the antelope, Cape buffalo, hippopotamus, giraffe, zebra, and wild ass, from which the donkey is descended.

Here also are the elephant, the rhinoceros, and many monkeys, including the huge, manlike gorilla and the smaller chimpanzee. The most interesting bird is the ostrich.

The plants include many palms, among them the oil palm and the date palm, and many acacias, most of them yielding valuable gums, such as gum arabic. The coffee tree is a native of northeastern Africa.

108. The Oriental Region is noted even more than the African for flesh-eating animals; for besides the lion, leopard, and hyena, it has the tiger, the largest, strongest, and fiercest of the cat family. Like the African, too, this region has the elephant, rhinoceros, and buffalo. Elephants and buffaloes are domesticated. Another domestic animal, the zebu, is much like our domestic cattle, but has a hump over its shoulders.

Here are also found bears, several kinds of deer, wild swine, tapirs, mice, squirrels, and several kinds of monkeys, including the orang-outang.

Among the birds are the peacock and the jungle fowl, from which our chickens are descended.

In the hot lowland forests are many bamboos, palms, spice-yielding plants, and fine hard woods, such as teak, ebony, satinwood, and sandalwood.

The similarity of the life forms of Africa to those of the Oriental and Eurasian regions indicates that these regions have been connected as closely as at present for a very long time.

Supplemental Work. Bring to school a picture or a description of one animal and one plant belonging to each of these regions.

Read chapters 22, 23, and 33 in "Carpenter's Geographical Reader, Africa"; and chapter 27 in "Carpenter's Asia."

SOME ANIMALS OF THE AFRICAN REGION.

THE EURASIAN AND NORTH AMERICAN REGIONS

109. The Eurasian and North American Regions differ from each other less than any other two. Their plants and animals are so similar that it is believed the present barriers between the grand divisions in the Arctic region can not have existed very long. Yet the native life forms of the two regions are seldom exactly alike, and in some instances they are quite different.

In both regions are found bears, wild cats, wolves, foxes, deer, beavers, and squirrels. The white polar bear and the black bear are the same in the two regions, and the fierce grizzly bear is much like the European brown bear. The reindeer that is trained to draw sledges over the Arctic snows of Eurasia is practically the same as the wild caribou of northern North America. The European elk is the same as the American moose. The Rocky Mountain goat and the bighorn sheep are related to the many kinds of wild goats and sheep, including the ibex and chamois, of Eurasia; even the

American bison (buffalo) and musk ox are close kin to wild cattle found in Eurasia.

The puma, or American panther, skunk, raccoon, prong-horned antelope, muskrat, prairie dog, otter, and opossum are found only in America, while wild boars, camels, and wild horses are found only in Eurasia. The horse was brought to America by man.

Eagles, owls, hawks, and crows are found in both regions. Wild turkeys, buzzards, blue jays, orioles, mocking birds, and humming birds are American. Vultures, pheasants, magpies, and nightingales are peculiar to Eurasia.

Cone-bearing trees, as the pines, spruces, firs, hemlocks, and cedars, are found in both regions, as well as the oak, chestnut, beech, ash, elm, sycamore, walnut, maple, birch, and willow. But golden rod, asters, bald cypress, and redwood are found only in America; while the olive and almond are natives of Eurasia.

Some Animals of the Eurasian and North American Regions.

Some Animals of the Oriental Region.

110. Domestic Animals and Cultivated Plants are descendants of wild ones, but, under the care of man, many of them have changed so greatly that it is now hard to tell from which wild form they are descended. Eurasia seems always to have been the home of by far the greater part of mankind, and it is therefore natural that most of our domestic animals and cultivated plants are descended from wild animals and plants of that grand division.

Supplemental Work. Bring to school a picture, a specimen, or a description of some plant or animal of the North American region, and of some plant or animal of the Eurasian region.

Read chapter 41 in "Carpenter's Geographical Reader, North America."

ISLAND LIFE AND OCEAN LIFE

111. Island Life. Continental islands are usually close to the mainland, and many of them have not long been separated from it; hence their plants and animals are generally similar to those of the neighboring continent.

The oceanic islands also have received their life forms mainly from the continents. These consist chiefly of birds which can fly long distances, and of such forms as have seeds or eggs which can be easily transported. Some of these are so light that they will float or can be carried by the winds. Some are carried in the stomachs of birds, or attached to mud on their feet.

112. Ocean Life. Many warm-blooded animals, such as whales, porpoises, seals, and walruses, live part or all of the time in the sea, but come to the surface of the water to breathe. In addition to these are hosts of true fishes that can live and breathe under water, such as sharks, mackerel, and codfish, and the many kinds of shellfish, as oysters and lobsters. The sea also contains low forms of animal life in great variety, such as jellyfishes, sponges, and coral polyps, as well as many kinds of seaweed and other marine vegetation.

Light penetrates the ocean to a comparatively slight depth; and the water, except a thin surface layer, is almost as cold as ice; hence vegetable life in the ocean is more plentiful near the surface, and especially in the shallow waters near the continents. As food is thus most abundant in these regions, animal life also is most plentiful, though a few kinds of marine animals live near the bottom of the deepest parts of the sea.

Supplemental Work. Read "Animal Life in Madagascar" in Johonnot's "Flyers, Creepers, and Swimmers," and Parts III. and IV. of Johonnot's "Glimpses of the Animate World."

TOPICS ON DISTRIBUTION OF LIFE

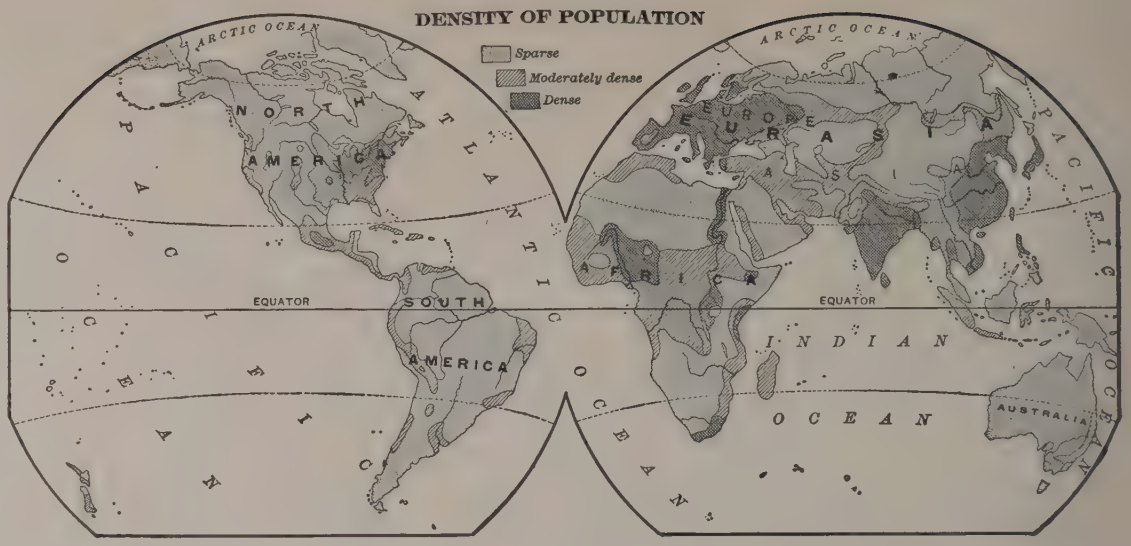
I. Number of Life Forms. Effect of climate on; resulting distribution.

II. Kinds of Life. Forests: equatorial; temperate. Grassy lands: cause, distribution. Tundras: cause, distribution. Deserts: cause, distribution, forms of life.

III. Barriers. What they are. What they cause.

IV. Life Regions. Continental plateau: central regions — common forms, peculiar forms, present barriers; outlying regions — number, most peculiar forms, chief forms of each; islands. Oceanic region: island life; sea life.

RACES OF MANKIND

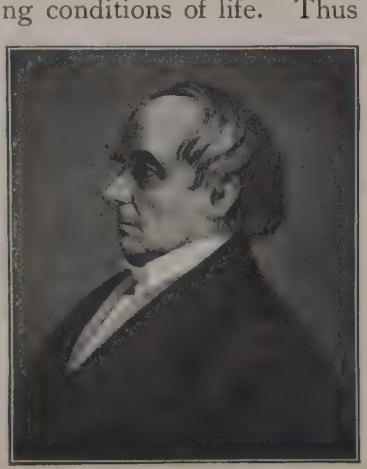


113. Distribution of Population. Man is vastly more intelligent than any of the lower animals. Thus he knows how to kindle a fire, and how to use it; to make the tools with which to fashion clothing and shelter; and to make weapons with which to defend himself. His intelligence also gives him the foresight to lay up food in summer for use during the winter, and to carry food with him when he travels to regions that do not supply it. Hence the barriers which prevent the spread of the other forms of life are not great barriers to man; men, therefore, live in nearly all the lands of the earth.

A region thickly peopled is said to have a *dense population.* In other regions one might travel for many miles without seeing a human being or any sign that people lived there. Such a region is said to have a *sparse population.* The regions of dense, moderately dense, and sparse population are shown on the map.

The two principal regions of dense population in eastern and southern Asia contain about half the people of the world, and the region of dense population in Europe contains nearly half of the remainder, so that these three regions of dense population in Eurasia contain fully twice as many people as all the rest of the world.

114. Races. It is believed that many ages ago men wandered away in various directions from some central region, and made homes for themselves in new lands where they found very different surroundings. To these their descendants gradually adapted themselves, just as the descendants of plants and animals gradually change and adapt themselves to changing conditions of life. Thus are thought to have arisen the *races* into which mankind is usually divided. Because of differences in the color of the skin the races may be called the *white* race, the *yellow* race, the *brown* race, the *red* race, and the *black* race.



WHITE RACE.

115. White Race. The home of the white or "Caucasian" race is Europe, southern and southwestern Asia, and northern Africa. The people have fine, wavy hair, and most of them have pinkish white skin, though some are quite dark. This race includes nearly half the people in the world, and is the most civilized of all the races. There are two principal divisions of this race, the *Aryans* and *Semites.* The Aryans include most of the people of Europe and many of those of southern Asia. In recent times thousands of the Europeans have left Europe to found homes in other parts of the world, and they have practically taken possession of North and South America and of Australia, and are rapidly taking possession of Africa. The Semitic people include the Jews, Arabs, and their descendants. Their home is south and southeast of the Mediterranean Sea.

116. Yellow Race. The home of the yellow or "Mongolian" race is northern and eastern Eurasia. The people of this race have straight, coarse, black hair, almond-shaped eyes, and yellowish skin. They are nearly as numerous as those of the white race, but most of them are not so highly civilized. The Japanese are the most progressive of the yellow people, but the Chinese are by far the most numerous.

117. Brown Race. The home of the brown or "Malay" race is extreme southeastern Asia, the Philippines and other islands of the East Indies, Hawaii, and other small oceanic islands of the Pacific. The people of this race have straight, black hair and a brownish yellow skin. They are sometimes included in the yellow race.

YELLOW RACE.

118. Red Race. The red or "American" race occupied the whole continent of America before it was settled by white men. The

people of this race are called Indians. They have straight black hair and reddish yellow or copper-colored skin; by some they are included in the yellow race. Many of them were roving savages when white men first came to America, but some tribes in the western highlands of both North and South America lived in permanent houses of stone or of sun-dried clay.

119. Black Race. The home of the black or "Negro" race is central and southern Africa and some of the Australian islands. The peoples of this race have coarse woolly or kinky hair, protruding lips, and dark brown or black skin. The black race includes some of the most ignorant people in the world.

The true *negroes* live in central Africa. The small black people who live in some of the islands north of Australia are called *negritos*, or Papuans. The natives of Australia itself have black skin but straight hair, and by some are thought to be a separate race.

BLACK RACE.

MANNER OF LIFE

120. Savagery. It is probable that in very early times people lived in caves or trees; ate only such things as roots, wild fruits, insects, and the fish or wild animals they could kill. They wore no clothing but skins of animals; had few weapons except clubs, wooden spears, and bows and arrows; and only such tools as they could make out of stone, bone, and wood. The natives of Australia and the negritos in the Philippine Islands still live in this way, and some tribes of negroes in Africa and of Indians in America have made scarcely more progress. Such people are called *savages*, and their manner of life is called *savagery*.

BROWN RACE.

RED RACE.

121. Barbarism. After many years in savagery some people learned how to live more easily and safely. They found that pottery could be made of clay. They learned how to cultivate grain, and, in Eurasia, they tamed the wild cattle, sheep, and goats, and kept them in herds. Their supply of food was thus surer and more plentiful. From wool and the fibers of plants they learned to weave coarse cloth. In time they learned to use metals instead of stone in making their tools and weapons. Even if they have not learned to read and write, people who can do these things can live in greater comfort than savages. They may be called *barbarians*, and their manner of living, *barbarism*. Some of the negro tribes of Africa and the Mongolian tribes of northern Asia are to-day in the stage of barbarism, and most of the Indians in America when it was first visited by white men were barbarians.

122. Civilization. When at last men learned to read and write, and were thus able to leave a record of what they did and thought, they could do many other things which enabled them to live more comfortably than barbarians. They had learned to build substantial houses, and lived in permanent homes. They maintained schools of some kind; carried on some regular business, as farming, trading, or manufacturing; and had some established government to maintain order. People who live in this way are said to be *civilized*, and their stage of culture is called *civilization*.

Most of the yellow race and part of the Malay race have reached some degree of civilization. But some people learn more rapidly than others, and the Caucasian race includes the most enlightened people in the world.

GOVERNMENT AND RELIGION

123. Government. In very ancient times there was so little property that it was not necessary to make rules or laws concerning it. People owned things in common. In time of peace the father of the family or the old men and women of the tribe gave counsel to the others; and in time of war the ablest warriors were chosen as chiefs to lead the various war parties.

As men gradually increased in knowledge, however, and were able to accumulate flocks and herds or other valuable property, they frequently disputed about its ownership. The stronger often seized upon the possessions of the weaker, whom they forced to serve them.

In this way, especially in Europe, two classes of people were developed: the rich and powerful families, who made all the laws; and the great mass of common people, who at last came to think that the powerful families were nobles born to rule them.

Still later the strongest of the nobles claimed to be the *king*, or *monarch*, of a great region surrounding his home, and to own all the land and the people living on it; but he gave parts of the region to the weaker nobles living on it, on condition that they should help him in war and acknowledge that he, and one of his family after his death, should be monarch. Thus *monarchies* were established in many parts of Eurasia.

124. Monarchies. The first monarchies were *absolute*, or *despotic;* the monarch made all the laws and could put any of his subjects to death. Only a few absolute monarchies still exist; for as the people gradually became more civilized, little by little they took much of the power away from the monarch. In these more civilized countries the laws are made by a body of men, composed partly of nobles and partly of men chosen from the common people, while the monarch enforces the laws thus made. Such are the governments of most of the countries of Europe to-day. They are called *limited* or *constitutional* monarchies.

St. Paul's, London.

125. Republics. In some countries, when the common people became strong and enlightened, they decided to take the powers of government into their own hands and to do away entirely with the monarch and nobles. In such countries the people elect a body of men to make the laws, and a chief officer, or *president*, to see that the laws are executed. These men hold office only a few years, and then others are chosen to succeed them. Such a government is called a *republic*. The United States is a republic.

St. Basil's, Moscow.

St. Peter's, Rome.

126. Religions. While the wisdom and necessity of human government are recognized, most people believe in a higher power than man, this belief forming the basis of their *religion*.

The *Jewish* religion was proclaimed by Abraham in southwestern Asia about four thousand years ago. The Jews believe in one God and in the Old Testament. Jews are now found in all civilized countries, but most of them live in Europe.

Christianity teaches that Jesus Christ is the Son of God, and the Savior of mankind. Christians believe in one God and in the Holy Bible. This is the prevailing religion in Europe, America, and the other more highly civilized parts of the world. About one fourth of mankind profess Christianity. The chief divisions are the Catholic, the Greek Orthodox, and the Protestant churches.

Mohammedanism was proclaimed by Mohammed, about thirteen hundred years ago. Mohammedans believe in one God, but the Koran is their holy book. This is the prevailing religion in most of northern Africa and southwestern Asia. Its followers include about one tenth of the people in the world.

Brahmanism is a very old religion of southern Asia. Its chief god is called Brahma. This religion divides its followers into classes, or *castes*, and the members of different castes are not allowed to eat the same kind of food, follow the same business, or associate with one another. More than one tenth of mankind are Brahmanists.

Buddhism is professed by most of the people of eastern Asia, and its followers embrace more than one third of the human race. It denies the existence of a soul, but teaches charity and kindness to all living things.

Paganism. The more ignorant tribes of men are pagans. They believe in many gods or spirits, and worship them, or idols representing them. There are about as many pagans as Brahmanists.

AGRICULTURE

127. Industries. The production of raw material for food, clothing, and shelter gives rise to five great industries: *agriculture*, *herding*, *fishing*, *lumbering*, and *mining*. The fitting of raw material for use gives rise to the industry of *manufacturing;* the distribution of raw material and the manufactured product gives

WHEAT HARVESTING ON THE CENTRAL LOWLAND OF THE UNITED STATES.

rise to the industry of *commerce*, or trade and transportation. These seven industries afford occupation and the means of livelihood to the greater part of civilized mankind.

128. **Agriculture**, or the cultivation of plants for man's use, is the most important of the industries. It gives occupation to about one fourth of the world's civilized workers.

Plants need for their best growth the proper food and the right amount of heat and moisture. Part of their food is taken from the ground through their roots, but as all plants do not require the same food, different crops are planted in successive years. This *rotation of crops* greatly retards the exhaustion of plant food in the soil. Occasionally the soil is replenished with plant food by adding manure or other *fertilizer*.

The supply of moisture may be regulated by *draining* if there is too much, and by *irrigation* if there is too little. Irrigation consists in conducting water in a canal from some stream or reservoir, and distributing it over the land in ditches.

Among the best farming lands of the world are the plains drained by the great rivers of the temperate regions; but wherever there are soil, warmth, and moisture sufficient for plants, food may be raised.

129. **Cultivated Plants.** The chief food plants store nourishment in seeds which are called *grain*. Wheat, rice, corn, rye, oats, and barley are the most important kinds of grain.

Wheat grows best in a rather cool climate, and hence is extensively cultivated in the lowlands of both temperate zones, and in the highlands of the torrid zone. It forms the chief food of the people of America and western Europe.

Rice is raised in rather warm climates, and chiefly in localities that can be easily flooded.

Corn thrives well wherever the weather is hot and moist during its short growing season. It is one of the chief foods both of man and of the domestic animals.

Rye, *oats*, and *barley* are cultivated in the cool parts of nearly all countries in the temperate zones.

There are other plants used for food, some of which, like the potato, store nourishment in their underground stems, while others, like the beet, store it in their roots. About half of the sugar used in the world is made from the beet. The other great sugar-producing plant is the sugar cane, a kind of grass which looks much like Indian corn. It requires a hot, moist climate.

Of *fruits*, the apple is the most important of the temperate zone, since it can easily be kept throughout the winter. Oranges and lemons, also much used, are raised in warmer regions, and bananas and dates form the chief food of man in some tropical countries.

Tea is grown in both temperate and tropical parts of the eastern hemisphere, while *coffee*, a native of the tropical climate, is cultivated in both hemispheres.

Fibers. Cotton is the most important plant cultivated for other purposes than food. From this plant is obtained a fiber of which is made the most widely used cloth in the world. The cotton-producing regions of the world lie in the moist lowlands of the temperate regions. Flax, from which linen and linseed oil are obtained, and hemp and jute, from which rope and cordage are manufactured, are also fiber plants. They grow in both warm and cool countries.

Supplemental Work. Bring specimens of useful plants to school to form a collection. Bring to school a description of one grain, or root, or fruit, used by man as a food; of one useful plant not used for food.

HERDING

130. **Domestic Animals.** The raising of domestic animals is closely associated with farming, and nearly every farmer pursues this industry also to some extent. In many parts of the world, however, especially in the drier parts of the open grassy regions, where the rainfall is not sufficient for successful farming, the herding of horses, cattle, and sheep is the chief occupation.

IRRIGATED ORCHARD, ARIZONA.

CATTLE RAISING, WYOMING.

LUMBERING, WASHINGTON.

The draught and pack animals differ in different parts of the world, the most useful being the horse, the mule, the donkey, the camel, the elephant, the water buffalo, the ox, the llama, and the reindeer. The dog also is used in certain countries.

Cattle, the most important food animals, supply milk, butter, cheese, and beef. Hogs are raised in enormous numbers, especially in corn-producing regions, and also in forest regions where they can feed on the wild nuts. Though the flesh of sheep and goats is eaten, these animals are raised chiefly for their wool or hair, which is converted into clothing.

Much of the meat of these animals is eaten fresh, as it is possible to send live cattle and sheep long distances in cars or steamships. Fresh dressed meat may also be shipped in iced or refrigerator chambers. Meat may also be canned fresh, preserved by salting or smoking, or made into extracts.

When these animals are slaughtered, all parts of the carcass are now used. Bones, horns, and hoofs are made into combs, buttons, and glue. Hair and refuse wool are made into felt; bristles into brushes; even the blood is used to make animal charcoal.

Poultry are raised not only for food but also for their eggs. Both the live fowls and their eggs are articles of export from many countries.

From the alpaca, which is kept in large herds on the great highland of South America, and in some parts of the world from the camel, hair for cloth making is obtained.

Supplemental Work. Supply to the school collection such animal products as you can obtain. Bring to school an account of one domestic animal, describing it, and telling where and how it is raised and what its uses are.

COD FISHING ON NEWFOUNDLAND BANKS.

FISHING

131. Fisheries. The most valuable fishing regions are the shallow parts of the sea near the shores of the continents, in the north temperate zone. Among these are the great cod fisheries on the "Banks" south of Newfoundland (p. 36), and the cod and herring fisheries of northwestern Europe. The salmon fisheries of the northwestern coast of America, and the oyster fisheries on both coasts of the north Atlantic, are also very valuable.

The most valuable fresh-water fish are the whitefish from the Great Lakes of North America and from the lakes of northern Europe.

Certain sea animals other than fish are also considered valuable for other purposes than food. Among these are the fur seal of Bering Sea; the whale, prized for its oil and the whalebone from its mouth; the sponge; the pearl oyster; and coral.

Cod are usually caught by means of long lines, or *trawls*, having baited hooks attached every few feet. The trawls are held in place by anchors, and visited every day, the fish removed, and the hooks rebaited. The fish are cleaned and salted, and later, on shore, are dried in the sun before being sent to market.

Herring and mackerel, which are smaller than cod, are usually caught with long nets, called *seines*. Herring are salted, smoked, and dried, but mackerel are preserved in a strong brine. Very small herring, caught on the North American coast, are canned in oil, and called *sardines*, though the true sardines are caught in great numbers only off the south and west coasts of Europe.

Salmon are caught in rivers, up which they come from the sea to lay their eggs. These fishes are canned in great numbers on the west coast of North America.

Oysters live upon the bottom of shallow shore waters and are obtained by dredging, or with tongs. Immense quantities of them are taken along the coasts both of Europe and of America.

Pearl oysters, beautiful coral, and the sponge, the skeleton of which is the sponge of commerce, are found in the warmer parts of the sea.

Supplemental Work. Supply to the school collection some product of the sea. Bring to school an account of some sea animal or plant, or of the fisherman's life. Find out about the Fish Commission at Washington, and its work.

LUMBERING

132. Forest Products. From the forests come wood for fuel and lumber for houses and for other purposes. In addition many other useful products are obtained from trees. The pines yield tar, pitch, rosin, and turpentine. The sap of several kinds of tropical trees and huge climbing vines yields rubber; oak, hemlock, and other barks are used in tanning leather; much paper is made from wood ground to a pulp; and many trees yield drugs and dyewoods.

In many places trees are cut in the autumn and winter by lumbermen, who at these seasons live in camps in the forests. After the trees are felled they are cut into logs, which during the floods are floated down the nearest stream to the sawmill. Logs cut on a mountain side are often slid down artificial chutes. In some places railroads are built to carry logs to the mills or to the water. At the sawmills the logs are cut into square timber or into planks.

The various kinds of woods differ in grain, hardness, and durability, and are for that reason suited to different uses.

Supplemental Work. Supply to the school collection specimens of wood and forest products. Bring to school a description of one kind of useful tree, or an account of methods of lumbering. Find out about Arbor Day.

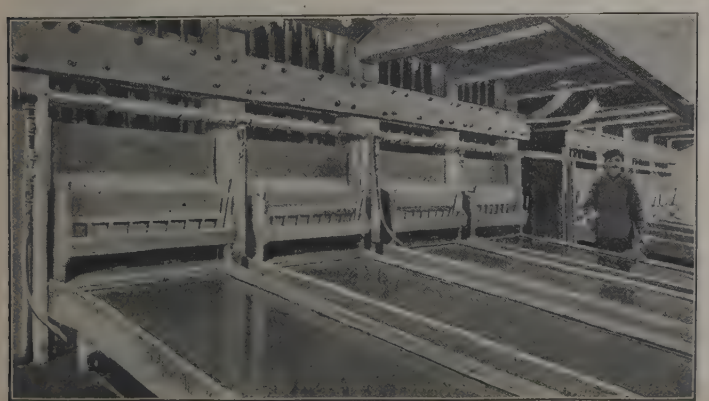
MINING

133. Mining is the process of getting minerals out of the earth. The most useful minerals are coal, iron, petroleum, copper, gold, silver, tin, lead, zinc, and building stones.

134. Coal. The most important branch of this industry is the mining of coal, which is extensively used for fuel and for making illuminating gas. Coal exists in all the grand divisions, but by far the greater part used is mined in western Europe and eastern North America.

We have learned (§ 71) how coal was formed. In some places the coal beds crop out at the sides of a valley or of a mountain, and the coal is mined by blasting tunnels into the bed; but in many places the coal can be reached only by sinking a deep hole, or shaft, to the bed. From the bottom of the shaft tunnels are made in the coal bed, and then the coal between the tunnels is taken out. Tracks are laid in the mines, and on them trains of cars dragged by mules or electric engines carry the coal to the mouth of the mine, or to the foot of the shaft, up which it must be hoisted.

Anthracite Coal Mine, Pennsylvania.



Gold Milling and Washing, Montana.

135. Iron. The next most important product of the mining industry is iron. Of all the metals iron is the most useful. One of its useful forms is steel.

Like most of the other metals, iron is not found pure, but is combined with other substances, forming *ore*.

Iron ore is found in nearly every country, but those mines which are most convenient to coal have been most worked; hence the great iron-mining regions of the world are usually in or near the great coal-mining regions.

Iron ore is sometimes found near the surface of the ground, where it is collected by pick, shovel, and scraper; but iron ore, as well as the ores of the other metals, is also mined underground in much the same manner as coal is mined.

The ore is put into great furnaces with coal, coke, or charcoal, and some *flux*, usually limestone. The burning of this fuel melts the ore, and the metal iron, made more liquid by the flux, then flows off nearly pure. This process is called *smelting*.

Steel Making (Bessemer Converter).

136. Gold and Silver are much scarcer than many of the more useful metals. One or both of them are used as money throughout the civilized world.

The rock bearing the gold is crushed to the finest powder in a "stamp mill," and the powder is then washed with water containing a substance which extracts all the gold but leaves the rock.

Fine pieces of gold, or "gold dust," are also found in the rock waste of gold-bearing rock, from which the gold may be separated by washing, and sometimes by collecting with quicksilver.

Stone is used extensively not only for building, but also for making roads and pavements. Slate rock is used for roofs, and much limestone as a flux in smelting iron. Great quantities of certain kinds of limestone are made into cement and lime.

Supplemental Work. Bring to the school collection specimens of minerals, metallic ores, or stones. Bring to school an account of one mineral product, or of one method of mining or quarrying.

MANUFACTURING

137. Preparing raw materials for the use of man constitutes the industry of *manufacturing*.

Formerly most manufacturing was done in the homes of the people by the aid of simple tools or machines operated by hand, but nowadays it is done chiefly in factories by machinery run by steam or electricity.

Flour Mill, Minnesota.

Machine Shop, New York.

138. Manufacturing Regions. Man now has engines to run machinery, and railroads and steamships to bring fuel and raw material to the factories and to distribute the manufactured goods; hence manufacturing towns grow up at convenient localities in various parts of the civilized world. Countries in which coal and iron are extensively mined, as in eastern North America and western Europe, have become most active in manufacturing. About one fourth of the white race are engaged in this industry.

139. Chief Manufactures. The chief manufacturing industries are the weaving of cloth, the smelting and working of metals, and the preparation of foods.

Textiles. Cotton is the most important cloth-making material. Wherever it is grown, the fiber is separated from the seed and then pressed into bales by machinery. The bales are then shipped to the mills and factories, where the fiber is spun and woven into cloth.

Somewhat as cotton is treated, so also is wool; silk; flax, of which linen is made; and jute, used for making coarse cloth.

Metals. More iron and steel are used in manufactures than all the other metals put together. Copper, tin, lead, and zinc are used in the manufacture of hardware, and copper wire is used in electrical work. Tinware is made of sheet iron to which has been given a thin coating of tin. Lead is made into pipe. Zinc is used as a coating for iron, forming what is called galvanized iron; and when mixed with copper it forms brass.

Food. The conversion of the various grains into flour and meal, the canning of fish, meat, fruit, and vegetables, and the making and refining of sugar afford employment for thousands of people.

Supplemental Work. Find out about James Watt, Sir Richard Arkwright (Smiles's "Self-Help," Eclectic Readings), Eli Whitney and the cotton gin (Harris's "Stories of Georgia").

COMMERCE

140. Commerce. Different parts of the world produce different things, and what is produced in one part is often needed in another; hence the people of different regions sell their surplus products to one another. The buying, selling, and carrying of commodities make the industries of trade and transportation, which together are called *commerce*. When commerce is carried on between parts of the same country, it is known as *domestic* commerce, but trade between different countries is called *foreign* commerce.

Cotton Mill, Massachusetts.

Railroads and steamships have made transportation cheap, rapid, and certain, and thus have made profitable the factory system of manufacture. They have made it possible also to send raw materials to distant regions to be manufactured, and to carry food to the manufacturing people from distant agricultural regions.

Wool from Australia, cotton from our own country, and silk from Asia are sent to Europe to be made into cloth, part of which is often sent back to be sold in the very countries where the raw materials were raised; and the people of the western part of Europe rely upon the people of North America for much of their wheat, flour, beef, and pork, and upon Australia for part of their mutton. Tea comes from Asia; coffee from South America; and most of our sugar from the West Indies, South America, and the islands of the Pacific.

As only the products not used at home are exported to other countries, foreign commerce forms a very small part of the whole commerce of the world.

141. Means of Transportation. Goods are transported not only on railroads and ships, but also by teams on

A Modern Ocean Steamship.

Railroad Yard and Harbor, Tacoma, Washington.

common roads, and by boats on rivers and canals. Teaming is necessary in carrying goods to all the commercial routes, but it is the most expensive mode of transportation. A team pulls so small a load and travels so slowly, that if the distance is great, the food and care of the team will cost as much as the load is worth. Transportation by river, canal, or sailing vessel on the ocean is very cheap, though much slower than by railroad or steamship. In the more civilized countries most of the traffic is carried by railroad, and about half of the ocean traffic is by steamship.

142. Aids to Commerce. Telegraph cables, laid on the sea bottom, connect all the continents, so that information can be sent instantly to the most distant countries; and postal routes have been established, by which, at little cost, letters may be quickly and surely delivered to any place in the world. The telegraph, the telephone, and the post office are invaluable aids to commerce.

In order to promote foreign commerce, each country has, in all the large trading cities in the world, men called *consuls* to look after the interests of its sailors and merchants who trade there, and to collect information about what the people of the country produce and what they need. Most civilized countries also issue maps of the coasts and harbors, and build lighthouses and life-saving stations along the coasts. In many countries the harbors and rivers have been deepened or improved. In some countries the government owns the railroads, and in nearly all civilized countries it has aided in building them.

Supplemental Work. Make a list of the articles on the breakfast table this morning and try to find where each article came from, and how it was manufactured. Write a history of one article on your list. Find whether any article produced in your neighborhood enters into our foreign or domestic commerce. Find out about Robert Fulton, Samuel F. B. Morse, and Thomas A. Edison (Perry's "Four American Inventors") and George Stephenson (Smiles's "Self-Help," Eclectic Readings).

TOWNS AND CITIES

143. Centers of Population. Most of the trade and manufacturing of the world are carried on in towns and cities. Although the raw materials themselves are seldom produced there, they are usually sent there to be manufactured and sold. In general, therefore, cities and towns are centers of population in which goods are assembled, manufactured, or distributed.

Thus a city is a convenience both to producers and to purchasers, and therefore it must be within easy reach of both. Hence cities have usually grown up at good harbors, or on navigable rivers or lakes, or at the junction of railroads. Many are at waterfalls or rapids, or near mines of some kind. Among the cities and towns, the one that can be most easily reached by the greatest number of people, and by the greatest amount and variety of products, is sure to grow to be the largest. Many of the large cities of the world started as military posts.

Supplemental Work. Try to find out why the town in which you live, or the town nearest your home, is located where it is. It is located just where it is for *some* reason.

A Business Street, New York.

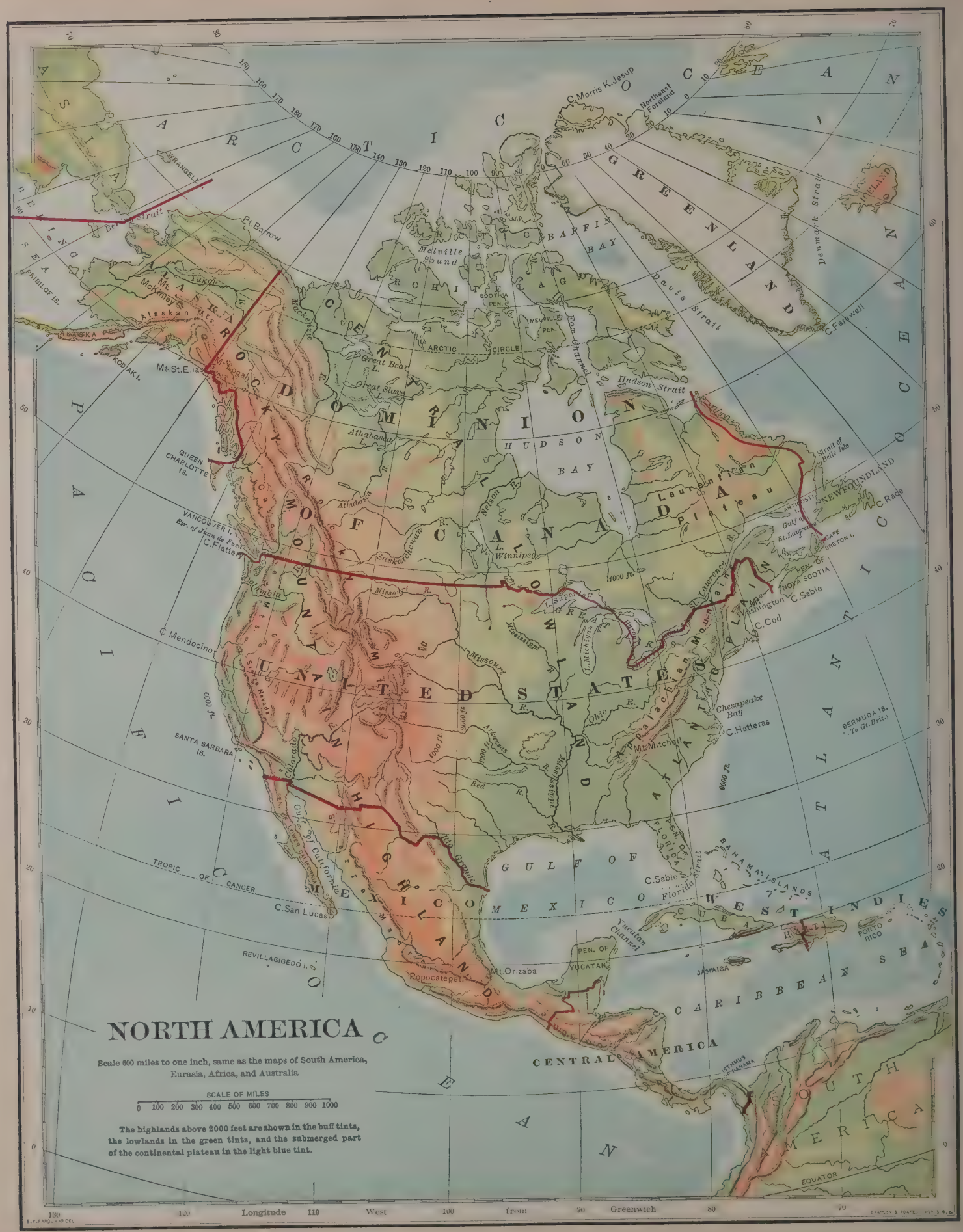
If you live in the city, write an account of some visit which you have made to the country; if you live in the country, write a description of the largest town which you have seen, and tell how it differs from the place where you live.

TOPICS ON MAN AND HIS PROGRESS

I. Population. By number: dense; moderate; sparse. By races: white; yellow; brown; red; black.

II. Progress. In intelligence; in culture; in government.

III. Industries. Procuring material: vegetable; animal; mineral. Transforming materials: by hand; by machinery. Exchanging goods: transportation — by land, by water; trade — domestic, foreign; aids.


NORTH AMERICA
Scale 600 miles to one inch, same as the maps of South America, Eurasia, Africa, and Australia
SCALE OF MILES
0 100 200 300 400 500 600 700 800 900 1000
The highlands above 2000 feet are shown in the buff tints, the lowlands in the green tints, and the submerged part of the continental plateau in the light blue tint.
Longitude West from Greenwich
ARCTIC OCEAN
PACIFIC OCEAN
ATLANTIC OCEAN
GREENLAND
ICELAND
ASIA
BERING SEA
ALASKA
PRIBILOF IS.
ARCTIC CIRCLE
BARFIN BAY
Davis Strait
Denmark Strait
C. Farewell
C. Morris K. Jesup
Northeast Foreland
Pt. Barrow
Bering Strait
WRANGELL
Melville Sound
BOOTHIA PEN.
MELVILLE PEN.
Fox Channel
Hudson Strait
Great Bear L.
Great Slave
Athabasca L.
ROCKY MOUNTAINS
Mackenzie R.
Mt. St. Elias
Mt. McKinley
Yukon
Alaskan Mts.
ALASKA PEN.
KODIAK I.
QUEEN CHARLOTTE IS.
VANCOUVER I.
Str. of Juan de Fuca
C. Flattery
Columbia R.
HUDSON BAY
Athabasca R.
Nelson R.
Saskatchewan R.
L. Winnipeg
Laurentian Plateau
Gulf of St. Lawrence
St. Lawrence R.
Strait of Belle Isle
NEWFOUNDLAND
C. Race
CAPE BRETON I.
PEN. OF NOVA SCOTIA
C. Sable
C. Cod
Mt. Washington
L. Superior
L. Michigan
L. Huron
L. Erie
Niagara Falls
Appalachian Mountains
Missouri R.
Mississippi R.
Ohio R.
Arkansas R.
Red R.
Rio Grande
Colorado R.
Sierra Nevada Mts.
UNITED STATES
CENTRAL PLAINS
LOWLANDS
4000 ft.
6000 ft.
C. Mendocino
SANTA BARBARA IS.
C. San Lucas
TROPIC OF CANCER
REVILLAGIGEDO I.S.
Gulf of California
Lower California
MEXICO
Mt. Orizaba
Popocatepetl
GULF OF MEXICO
Florida Strait
PEN. OF FLORIDA
Chesapeake Bay
C. Hatteras
Mt. Mitchell
BAHAMA ISLANDS
C. Sable
WEST INDIES
CUBA
HAITI
PORTO RICO
JAMAICA
Yucatan Channel
PEN. OF YUCATAN
CARIBBEAN SEA
CENTRAL AMERICA
ISTHMUS OF PANAMA
SOUTH AMERICA
EQUATOR
BERMUDA IS. (To Gt. Brit.)

NORTH AMERICA

LAKE LOUISE, IN THE ROCKY MOUNTAINS OF CANADA.

PHYSICAL FEATURES

The Map Exercises (in small type at the beginning of sections) form an important part of the course.

Location, Coast Features, and Relief.[1] What ocean is north of North America? east? west? What strait separates North America from Asia? What isthmus connects it with South America? In what zones does it lie?

Name a bay and two peninsulas on the north coast. Name two gulfs and a sea on the east coast. What three peninsulas are on that coast? Name a gulf, a sea, and two peninsulas on the west coast. Which coast seems to be the longest? which the most regular? Off which coast are the largest islands? Name the largest. What island is east of the Gulf of St. Lawrence? What island chain partly incloses Caribbean Sea? Name the largest island on the west coast.

In which part of North America is the great highland region? In what direction does it extend? Measure its greatest width, using the scale of miles. What long mountain chain extends through the central part of the highland region? What three ranges border the highland on the west? Name two highland regions in the eastern part of North America. Which part of North America is a great lowland plain? Compare the Atlantic and Pacific coast plains in width.

North America, in which we live, is one of the natural grand divisions of the continental plateau (§ 20). It is the third in size, and it includes less than one fifth of the land in the world. It is roughly triangular in shape, but the northern and eastern sides are quite irregular.

The summits of the great mountain ranges of the west are from two to nearly four miles above the sea. The plateau from which they rise is itself a mile high. Mount McKinley, in the north, is the highest peak in the grand division. East of the Rocky Mountain chain the highlands slope gradually to the Central Lowland; west of this chain the plateau surface is broken by short mountain ranges and deep canyons. Throughout the western part of the highland region there are numerous volcanoes, some of which are still active. Old outflows of lava, known as "lava fields," are common throughout the region, and earthquakes are frequent.

Through the western highlands extends the divide separating the part of the grand division which slopes to the Pacific ocean from the part which slopes to the Atlantic and Arctic oceans. This is called the *continental divide.*

The eastern highlands, though less extensive, are much older than the western highlands. They have been worn down by ages of weathering until their highest peaks are but little higher than the plateaus at the foot of the Rocky Mountains. Mount Mitchell, in the south, a little over a mile high, is the loftiest point of the Appalachian chain. Mount Washington, farther north, is nearly as high. The Laurentian plateau, still farther north, is generally low, and contains many isolated hills.

Between the western and the eastern highlands is the broad Central Lowland, extending from the Gulf of Mexico to the Arctic Ocean.

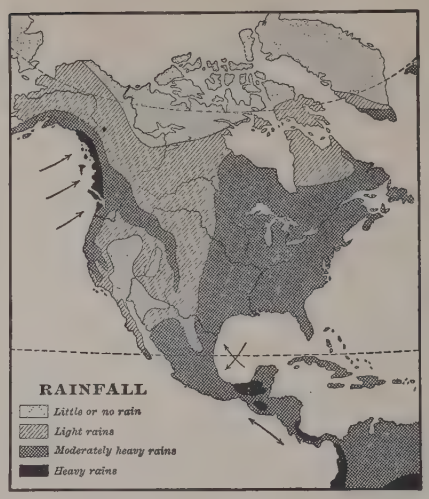
Drainage. What river of the Central Lowland flows northwest to the Arctic Ocean? What three large lakes are in its basin? What river flows northeast to Hudson Bay? What lake is in its basin? What large river

[1] In the physical maps of this book, the dark green indicates the parts of the lowlands which are less than 1000 feet above the sea, while the light green indicates such parts as have an elevation between 1000 and 2000 feet. The lightest buff tint shows the lowest parts of highlands, where the elevation is between 2000 and 4000 feet; the medium buff tint shows regions between 4000 and 6000 feet; the darkest buff tint shows regions which are over 6000 feet above the sea. The lines separating the different tints and colors thus indicate definite elevations, and are called *contour* lines.

flows into this lake? What river flows northeast to the Gulf of St. Lawrence? Name five "Great Lakes" in its basin. What great river of the Central Lowland flows south to the Gulf of Mexico? What is its longest tributary? Name a river which flows southeast to the Gulf of Mexico.

Name the three largest rivers of the Pacific slope. Into what body of water does each flow?

In what direction do most of the rivers of the Atlantic plain flow? How do they compare in length with those of the Central Lowland? with those of the Pacific slope?



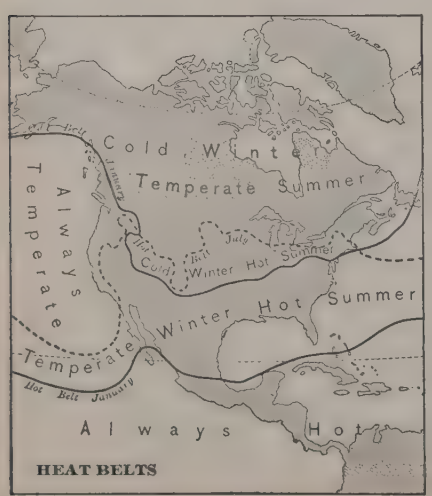
There are eight great river systems in North America, reckoning the Nelson-Saskatchewan as one system. Five of them lie partly in the Central Lowland, and only three lie on the Pacific slope. All these river systems except the St. Lawrence system have their headwaters in the Rocky Mountain chain, which for a great part of its length forms the continental divide.

The Mississippi-Missouri is the world's longest river, and as it is unobstructed by falls or rapids for a long distance from its mouth, it is of great commercial importance.

Just below the Great Lakes the St. Lawrence is obstructed by rapids, so that canals are necessary for the ascent of boats; but below the rapids large seagoing vessels ply during that part of the year when the river and gulf are not blocked by ice.

The waters into which the Mackenzie, Yukon, Colorado, and Mississippi flow, are nearly tideless, and consequently these rivers have built great deltas (§ 57). There is a bar at the mouth of the Columbia, though it is well covered with water even at low tide. The estuary (§ 28) of the St. Lawrence is a submerged valley.

North of the Missouri and Ohio rivers the divides between most of the streams in the great Central Lowland are so low as to be almost imperceptible. There are thousands of lakes in this region (§ 60). Many of them are so close together that the usual mode of travel used to be by canoes; these were carried on the shoulders of the travelers from one lake to another across the low divides. Such a divide is therefore called a *portage*, from a word which means "to carry."



Climate. This small map of heat belts shows the different temperature regions of North America, with their seasonal changes (§ 82).

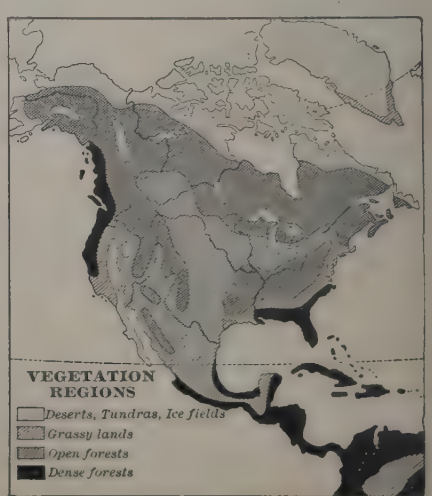
The central part of the west coast is always temperate, because the prevailing westerlies, which have the nearly uniform temperature of the Pacific Ocean, warm the coast in winter and cool it in summer (§ 86). By the time the winds reach the eastern part they have acquired the temperature of the land over which they have traveled; hence the eastern part is colder in winter and hotter in summer than the west coast.

The map at the top of this page shows the distribution of rainfall over North America. Along the northwest coast the prevailing westerly winds deposit copious rainfall as they ascend the abrupt slope of the great highland region. The region near the head of the Gulf of California is crossed by the tropical calms and hence has but little rain (§ 93 and map). In the southern part of North America the northeast trade winds bring copious rains to the east slopes in winter; but in summer, when the heat equator lies farthest north, monsoon winds from the Pacific bring rain to the southwest coasts. Farther north, the westerly winds, which have lost their moisture on the west side of the Sierra Nevada and Cascade Mountains, reach the plateau as dry winds. In the eastern half of the grand division, where the southerly winds in cyclones bring vapor from the Gulf of Mexico and the Atlantic, there is abundant rainfall.

Supplemental Work. Draw a circle to represent the western hemisphere, and make a sketch map showing what part of the hemisphere is covered by North America. Draw, on a larger scale, the outline of this grand division. Model North America. Write a comparison of the climates of the eastern and western coasts of North America.

VEGETATION AND ANIMALS

Vegetation. This map of the vegetation regions of North America, when compared with the maps of the heat belts and of rainfall, shows the influence of climate upon vegetation. In the regions of abundant rainfall in the warm south and the temperate west, heavy forests cover much of the surface. In the east, where the summers are long and the rainfall is ample, open forests and grassy prairies (§§ 99, 100) are found. In the drier region farther west the forests are confined chiefly to the mountain sides, which receive more rainfall than the adjacent lower country. West of Hudson Bay



Some Animals of North America.

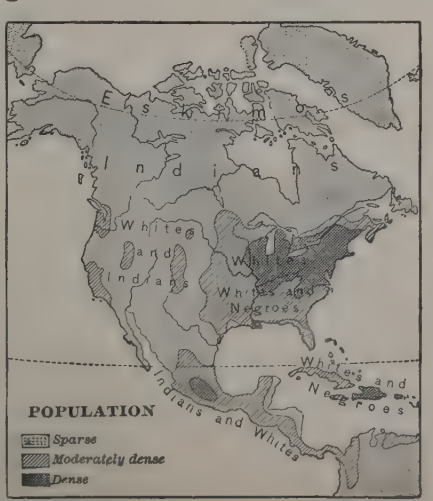
the heat and moisture are sufficient for a sparse growth of forest, but farther north the summers are too short, and most of this region is barren land or tundra (§ 101).

Animals. (Review § 109.) Along the Arctic coasts the largest animals are the polar bear and the musk ox. Farther south, in the open forests, range the moose, the elk, and vast herds of woodland caribou, or American reindeer. Here the brown and black bears, the lynx, wolverine, and smaller animals, such as the beaver, otter, and mink, are hunted or trapped for their fur, which grows fine and thick on the approach of the long, cold winter, and is of great commercial value. In the highlands of the west are the grizzly bear, the bighorn sheep, the Rocky Mountain goat, and the puma, or American panther.

Throughout the eastern part of the grand division, south of the Great Lakes, the larger native animals have been nearly exterminated. In that region are vast numbers of domestic animals, — horses, cattle, sheep, hogs, and chickens, — whose ancestors were brought to America from Eurasia by the white man.

In the dry transitional region (§ 104) of the southwest are found animals of both the North American and the South American region, as well as many peculiar scorpions, lizards, and other reptiles.

In the hot lowlands of the southern part of the grand division, animals of the South American region are common, such as alligators, monkeys, vampire bats, and jaguars, as well as brilliantly colored parrots and many kinds of humming birds.

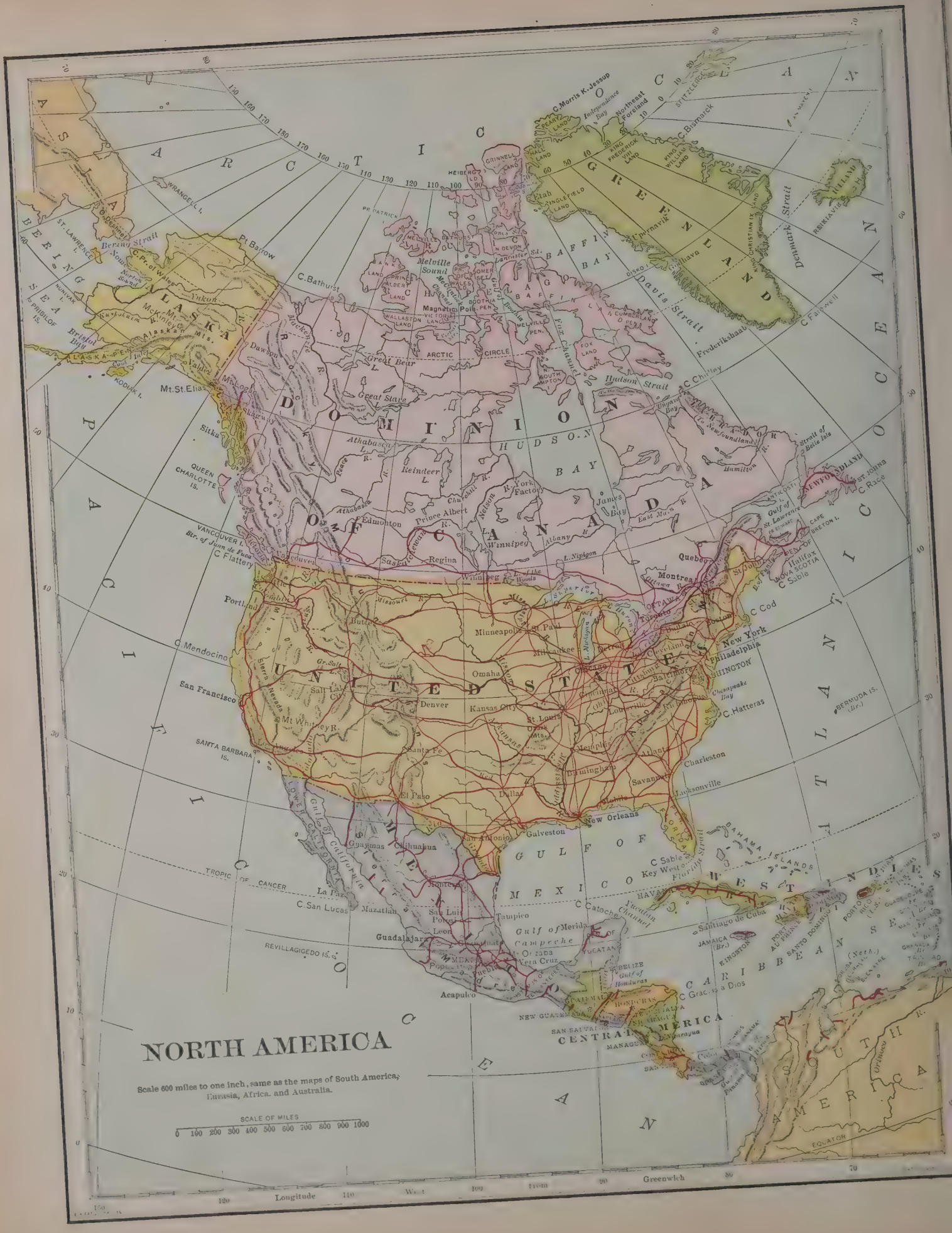


Supplemental Work. Make a list of the forest trees growing in your neighborhood. Make a list of the wild and domestic animals found in your neighborhood.

PEOPLE AND COUNTRIES

People. North America as a whole is very thinly peopled. It contains less than half as many people as it would have if the population of the world were evenly distributed over all the land. By far the largest number of people in North America live between the Great Lakes and the Gulf of Mexico, and on the islands and mainland south of the Tropic of Cancer. In parts of these regions the population is dense. In nearly all the remainder of the grand division the population is sparse, especially in the north, where it is very sparse.

The population map indicates the distribution of population and, in a general way, the distribution of races. The northern part of the grand division is occupied almost exclusively by Eskimos and Indians. South of the Great Lakes and the Saskatchewan River three races are represented, — Indians, whites, and negroes; whites and negroes in the east, and whites and Indians in the west.


NORTH AMERICA
Scale 600 miles to one inch, same as the maps of South America, Eurasia, Africa, and Australia.
SCALE OF MILES
0 100 200 300 400 500 600 700 800 900 1000
Longitude West from Greenwich
ARCTIC CIRCLE
TROPIC OF CANCER
EQUATOR
DOMINION OF CANADA
UNITED STATES
MEXICO
GREENLAND
ALASKA
CENTRAL AMERICA
WEST INDIES
Arctic Ocean
Pacific Ocean
Atlantic Ocean
Gulf of Mexico
Hudson Bay
Baffin Bay
Davis Strait
Hudson Strait
Bering Strait
Gulf of California
Mackenzie R.
Great Bear L.
Great Slave L.
Athabasca L.
Reindeer L.
Winnipeg
Hudson Bay
Vancouver I.
Queen Charlotte Is.
Alexander Archipelago
Aleutian Is.
Pribilof Is.
Kodiak I.
Mt. St. Elias
Mt. McKinley
Yukon
Dawson
Sitka
Victoria
Vancouver
Seattle
Portland
San Francisco
Mt. Whitney
Death Valley
Great Salt L.
Salt Lake City
Denver
Omaha
Minneapolis
St. Paul
Chicago
Detroit
Cleveland
Buffalo
Toronto
Ottawa
Montreal
Quebec
St. John
Halifax
New York
Philadelphia
Washington
Baltimore
Pittsburg
Cincinnati
Louisville
St. Louis
Kansas City
Santa Fe
El Paso
Dallas
Galveston
New Orleans
Memphis
Atlanta
Charleston
Savannah
Jacksonville
Key West
Havana
Cuba
Jamaica
Santiago de Cuba
Bahama Islands
Bermuda Is.
Yucatan
Campeche
Gulf of Honduras
Belize
Guatemala
Honduras
Nicaragua
Costa Rica
Panama
Acapulco
Guadalajara
Mexico City
Monterey
Tampico
Mazatlan
La Paz
Guaymas
Chihuahua
C. Mendocino
C. San Lucas
C. Catoche
C. Hatteras
C. Cod
C. Sable
C. Race
C. Farewell
C. Morris K. Jessup
C. Bismarck
C. Bathurst
C. Chidley
C. Flattery
Pt. Barrow
Pt. Hope
Pt. of Wales
Behring Strait
Davis Strait
Baffin Bay
Hudson Strait
Greenland
Iceland
Reykjavik
Godthaab
Disco
Upernavik
Julianehaab
Frederikshaab
Jan Mayen I.
Spitzbergen
Franz Josef Land
Nova Zembla
Siberia
Asia
Europe
Africa
South America
Panama Canal
Gulf of St. Lawrence
Strait of Belle Isle
Newfoundland
Labrador
Nova Scotia
Cape Breton I.
Prince Edward I.
Anticosti I.
Gulf of Mexico
Florida Strait
Yucatan Channel
Caribbean Sea
Mississippi R.
Missouri R.
Ohio R.
Rio Grande
Colorado R.
Columbia R.
Yukon R.
Mackenzie R.
Saskatchewan R.
Nelson R.
Hudson Bay
James Bay
Labrador
Ungava Bay
Frobisher Bay
Cumberland Sound
Baffin Land
Ellesmere Land
Grinnell Land
Heiberg Land
Melville Sound
Prince Albert Sound
Wollaston Land
Victoria Land
Melville Pen.
Boothia Pen.
Fox Land
Southampton
Prince Patrick
Banks Land
Prince Albert Land
Wrangel I.
St. Lawrence I.
Nunivak I.
Norton Sound
Kuskokwim R.
Yukon R.
Alaska Mts.
Mt. McKinley
Mt. St. Elias
Alaska Pen.
Kodiak I.
Aleutian Is.
Pribilof Is.
Queen Charlotte Is.
Vancouver I.
Str. of Juan de Fuca
Gulf of California
Lower California
Revillagigedo Is.
Santa Barbara Is.
Bermuda Is. (Br.)
Bahama Islands
Jamaica (Br.)
Kingston
Santiago de Cuba
Cape Verde Is.
Azores
Canary Is.
Madeira
Falkland Is.
Tierra del Fuego
Cape Horn
Strait of Magellan
Galapagos Is.
Marquesas Is.
Society Is.
Sandwich Is.
Fiji Is.
Samoa Is.
Tonga Is.
Hawaiian Is.
Honolulu
Midway I.
Wake I.
Guam
Philippine Is.
Manila
Japan
Yokohama
Tokyo
Kamchatka
Siberia
Behring Sea
Behring Strait
Aleutian Is.
Pribilof Is.
Kodiak I.
Alaska Pen.
Mt. St. Elias
Mt. McKinley
Yukon
Dawson
Sitka
Victoria
Vancouver
Seattle
Portland
San Francisco
Mt. Whitney
Death Valley
Great Salt L.
Salt Lake City
Denver
Omaha
Minneapolis
St. Paul
Chicago
Detroit
Cleveland
Buffalo
Toronto
Ottawa
Montreal
Quebec
St. John
Halifax
New York
Philadelphia
Washington
Baltimore
Pittsburg
Cincinnati
Louisville
St. Louis
Kansas City
Santa Fe
El Paso
Dallas
Galveston
New Orleans
Memphis
Atlanta
Charleston
Savannah
Jacksonville
Key West
Havana
Cuba
Jamaica
Santiago de Cuba
Bahama Islands
Bermuda Is.
Yucatan
Campeche
Gulf of Honduras
Belize
Guatemala
Honduras
Nicaragua
Costa Rica
Panama
Acapulco
Guadalajara
Mexico City
Monterey
Tampico
Mazatlan
La Paz
Guaymas
Chihuahua
C. Mendocino
C. San Lucas
C. Catoche
C. Hatteras
C. Cod
C. Sable
C. Race
C. Farewell
C. Morris K. Jessup
C. Bismarck
C. Bathurst
C. Chidley
C. Flattery
Pt. Barrow
Pt. Hope
Pt. of Wales
Behring Strait
Davis Strait
Baffin Bay
Hudson Strait
Greenland
Iceland
Reykjavik
Godthaab
Disco
Upernavik
Julianehaab
Frederikshaab
Jan Mayen I.
Spitzbergen
Franz Josef Land
Nova Zembla
Siberia
Asia
Europe
Africa
South America
Panama Canal
Gulf of St. Lawrence
Strait of Belle Isle
Newfoundland
Labrador
Nova Scotia
Cape Breton I.
Prince Edward I.
Anticosti I.
Gulf of Mexico
Florida Strait
Yucatan Channel
Caribbean Sea
Mississippi R.
Missouri R.
Ohio R.
Rio Grande
Colorado R.
Columbia R.
Yukon R.
Mackenzie R.
Saskatchewan R.
Nelson R.
Hudson Bay
James Bay
Labrador
Ungava Bay
Frobisher Bay
Cumberland Sound
Baffin Land
Ellesmere Land
Grinnell Land
Heiberg Land
Melville Sound
Prince Albert Sound
Wollaston Land
Victoria Land
Melville Pen.
Boothia Pen.
Fox Land
Southampton
Prince Patrick
Banks Land
Prince Albert Land
Wrangel I.
St. Lawrence I.
Nunivak I.
Norton Sound
Kuskokwim R.
Yukon R.
Alaska Mts.
Mt. McKinley
Mt. St. Elias
Alaska Pen.
Kodiak I.
Aleutian Is.
Pribilof Is.
Queen Charlotte Is.
Vancouver I.
Str. of Juan de Fuca
Gulf of California
Lower California
Revillagigedo Is.
Santa Barbara Is.
Bermuda Is. (Br.)
Bahama Islands
Jamaica (Br.)
Kingston
Santiago de Cuba
Cape Verde Is.
Azores
Canary Is.
Madeira
Falkland Is.
Tierra del Fuego
Cape Horn
Strait of Magellan
Galapagos Is.
Marquesas Is.
Society Is.
Sandwich Is.
Fiji Is.
Samoa Is.
Tonga Is.
Hawaiian Is.
Honolulu
Midway I.
Wake I.
Guam
Philippine Is.
Manila
Japan
Yokohama
Tokyo
Kamchatka
Siberia
Behring Sea
Behring Strait

The reasons for this distribution of population and races are partly climatic and partly historical. If you will compare this population map with the maps of the heat belts and rainfall on p. 38, you will see that practically all regions in which the population is dense or moderately dense have an ample rainfall, and that most of them either have hot summers or are always temperate. These are the climatic conditions which adapt a region for agriculture; and it is in such regions, where farming may be carried on, that most of the white and negro races live. In the regions which are too dry or too cold for agriculture the population usually is sparse and the inhabitants are chiefly native Indians.

Map Exercise. In what direction are Greenland and Iceland from the mainland of North America? What large bodies of water border each of these islands? What country occupies most of America north of the Great Lakes? What is the region northwest of the Dominion of Canada called? What country is south of Canada? How do the United States and Canada compare in size? What country is south of the western part of the United States? What general name is given to the narrow region between Mexico and South America? Name the four largest islands of the West Indies. Which of them is nearest to the United States? Which is farthest east?

Countries. The historical reasons for the distribution of population and races are also connected with the subdivision of North America into countries. When Columbus discovered America the whole grand division was thinly inhabited by Indians, with a few Eskimos in the north. The inhabitants in the north and west were mostly savages; those in the east and southwest had reached a low stage of barbarism; but west and south of the Gulf of Mexico, where most of the Indians lived, they had advanced nearly to the lowest stage of civilization.

After Columbus, came civilized white men from Europe, who explored America, and some settled there. They were chiefly Spaniards, Frenchmen, and Englishmen. Still later the Russians came across Bering Sea and established fur-trading posts in Alaska.

The Spanish explored and made settlements in Mexico, Central America, and the West Indies. The French made settlements in the St. Lawrence valley, which they called Canada, and explored the Great Lake region and the Mississippi valley. The English established colonies along the Atlantic coast between the peninsulas of Nova Scotia and Florida, and also explored the northern part of the continent.

Several wars occurred among the French, the English, and the Spanish. In time the French gave up to the English Canada and the land they claimed east of the Mississippi River. Great Britain still owns Newfoundland and the Dominion of Canada.

In 1776 the thirteen English colonies south of Canada declared their independence, and united to form the republic of the United States. After the Revolution, Great Britain ceded to the United States the country south of Canada as far west as the Mississippi. Later, the United States acquired the region west to the Pacific, bought Alaska from Russia, annexed the Hawaiian and other islands in the Pacific, and obtained possessions in the West Indies.

Many thousands of people from western and central Europe have come across the Atlantic Ocean to seek homes in the United States and in Canada; their descendants now far outnumber the original Indian inhabitants. The Indians have been gradually driven westward and northward into the drier and colder and less desirable parts of the grand division by the ever-advancing tide of civilized white settlers.

Not long after the United States was formed, the Spanish colonies west and south of the Gulf of Mexico secured their independence and became republics. The largest of these is Mexico, while farther south there are six smaller republics, which together make up Central America.

There were always many more Indians in Mexico and Central America than farther north, and not nearly so many white men have settled in these countries, so that now by far the greater part of the people living in Spanish North America are either Indians or people of mixed Spanish and Indian blood.

Spain once owned the West Indies, but now has no possessions there. Cuba is a republic, and there are two republics in Haiti. Porto Rico belongs to the United States; Jamaica, the Bahamas, and many of the small islands are possessions of Great Britain. France, Holland, and Denmark also own islands in the group.

When the Spaniards took possession of the West Indies they enslaved the Indians as laborers, but great numbers of them died. Then negro slaves were brought from Africa to the islands and to the United States, where they did the field work on the plantations. Slavery has long since been abolished, but the descendants of these negroes still form a large part of the population in the southern United States and in the West Indies. They are about as numerous as all the Indians in North America.

Long before Columbus was born the Norsemen, bold sea rovers from Scandinavia on the northwest coast of Europe, made settlements in Iceland and Greenland. These islands are sometimes called Danish America, for they belong to Denmark, a part of old Scandinavia.

Supplemental Work. Sketch a map of North America and indicate the various regions originally settled by different European nations.

TOPICS ON NORTH AMERICA

I. History. Of great highlands: the older; the more recent. Of man: discoveries; conquest; subdivision into countries — United States, Canada, Spanish republics; treatment of Indians; of negroes.

II. Physical Description. Location. Surroundings. Extent. Shape: general shape; coast outlines — peninsulas, gulfs and bays; river mouths — estuaries, deltas. Surface: highlands — western, eastern; lowlands — central, western, eastern; divides — continental, lesser; slopes — Pacific, Central, Atlantic. Climate: temperature; winds; rainfall.

III. Life. Vegetable: forests — northern, eastern, western, southern; plains — tundras, pasture lands, farming lands. Animal: northern; western; eastern; southern. Human: distribution; races; countries.

Map Exercise. What lands and waters border the United States? Using the scale of miles, measure the greatest length and width of the United States. Trace the continental divide across it. What slope is west of this divide? What highland region embraces most of this slope? What mountains border this highland on the west? The region west of these mountains may be called the *Pacific coast region*. Toward what arm of the sea does most of our country slope east of the continental divide? Trace the northern divide of the Gulf slope. In what physical region is most of this divide? Toward what two arms of the sea does the surface slope north of this divide? Trace the eastern divide of the St. Lawrence and Gulf slopes. In what region is most of this divide? What slope is east of it? What region is embraced in this slope? Name the five chief slopes of the United States; the five great physical regions.

Supplemental Work. Make a sketch map of the United States and draw the divides between its five great slopes. Show the five physical regions on your map by shading with different colored pencils.

THE UNITED STATES

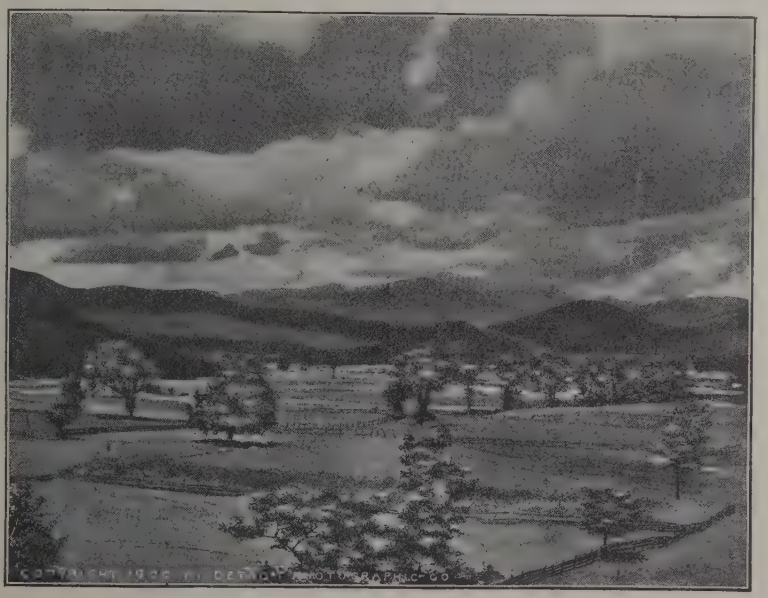
THE ATLANTIC PLAIN

The United States, the most important country of North America, occupies the central part of the grand division and extends from the Atlantic Ocean to the Pacific. It is traversed by all the great highlands and lowlands of the grand division.

In the east is the Atlantic plain, which is separated into two parts, physically distinct from each other, by the Hudson River (map, p. 42).

South of the Hudson the east half of the Atlantic plain is low, flat, and sandy. The coast is fringed with barrier beaches (§ 66), which inclose long, narrow lagoons. These lagoons are bordered with wide salt marshes. The sluggish streams have wide flood plains (§ 52), and, because the ocean tides ascend the larger streams through the width of this region, it is called the *Tidewater region*. Find this region on the map.

West of the Tidewater region the Atlantic plain rises more rapidly. The swift streams have cut wide and rather deep valleys (§ 49), leaving knolls and uplands of moderate elevation between. This is the foothill or *Piedmont region*.



Mount Washington, New Hampshire.

The boundary between these two regions is often called the *Fall line*, because falls or rapids occur on nearly all the streams where they cross it. The larger streams are navigable from the coast to these falls, where freight must be transshipped. For this reason and also because the falls furnish water power for manufacturing, many cities and towns have grown up along the Fall line.

Long ago the seacoast was at the Fall line. The Piedmont region had been rough highland, but ages of erosion had lowered its surface, reducing it almost to a plain (§ 51), while the rock waste worn from it was deposited in nearly level layers on the sea bottom to the east of the Fall line, where it gradually hardened into rock (§ 69). Then both regions were slowly upheaved, and the newly made layers of rock became the low, flat Tidewater region. The upheaval of the Piedmont region quickened the current of its streams and enabled them to cut their present valleys, making its surface again somewhat rough and hilly. After river valleys had been worn in the Tidewater region some parts of it sank slightly, permitting the sea to extend far up the valleys to form estuaries. New York, Delaware, and Chesapeake bays were made in this way.

Northeast of the Hudson River the Atlantic plain is narrower and is mainly the Piedmont region, which extends in most places to the seacoast. Its hard rocks form bold headlands and rocky islets, between which are deep fiords (§ 28) and sheltered sounds. The whole region is covered with the remains of the old Laurentian glacier (§ 60), such as gravels, clays, huge bowlders, and round-backed glacial hills. Old valleys were dammed by the glacial drift; many lakes were thus formed, and the streams, turned from their old courses, have cut new channels in the hard rocks. These channels are not yet worn down to uniform slopes; therefore the streams abound in falls and rapids.

Long Island and the smaller islands east of it, as well as the peninsula of Cape Cod, are largely composed of the clays and gravels heaped up in the terminal moraine (§ 59) along the melting end of this old glacier.

TOPICS ON THE ATLANTIC PLAIN

I. Northern Part. Width. Surface: hills; lakes; soil. Coast: indentations; projections; islands.

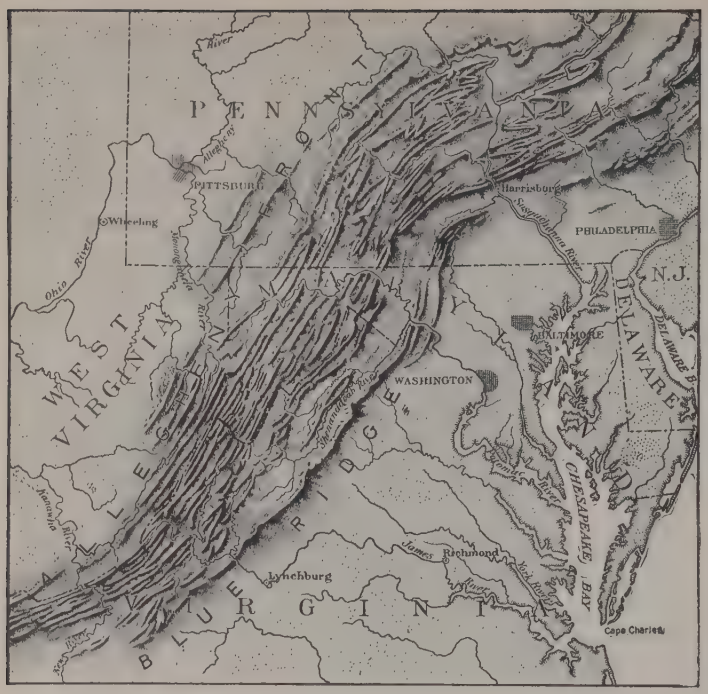
II. Southern Part. Western region: surface; drainage; formation; name. Eastern region: surface; coast — borders, indentations; drainage; formation; name. Fall line: reason for; formation; value.

THE APPALACHIAN MOUNTAINS

West of the Atlantic plain are the Appalachian Mountains (map, p. 42). These mountains are cut entirely across by the low valley which contains the Hudson River, flowing to New York Bay, and Lake Champlain, draining to the St. Lawrence River.

Northeast of this valley the mountains include a practically continuous range, which extends into Canada nearly to the Gulf of St. Lawrence (maps, pp. 42, 54). Its crest is worn into a succession of peaks and wide depressions. To the east of this range is another, less continuous, line of heights, which rises in Mount Washington to an altitude of over a mile, the greatest elevation of the northern Appalachians.

West of Lake Champlain is a low plateau from which rise the short but rugged ridges of the Adirondack Mountains.



THE NORTHERN PART OF THE APPALACHIAN RIDGE AND VALLEY BELT.

Southwest of the Hudson valley the eastern half of the Appalachian region consists of long, narrow mountain ridges, nearly parallel to one another, and separated by wide valleys. This part of the region is called the *Appalachian ridge and valley belt.* The ridges are about half a mile high, usually with smooth and even summits, but Blue Ridge, the most eastern range, has many peaks and is higher in the south. Mount Mitchell is over a mile high. The valley just west of Blue Ridge, called the "Great Valley," extends southwest from the Hudson to the Alabama River.

The western half of the Appalachian region is a broad upland, about as high as the Appalachian ridges. The streams have worn deep, narrow valleys into its surface, thus cutting it into a number of detached plateaus, called the *Allegheny plateaus.*

Trace the divide of the Atlantic slope southwestward from the source of the Hudson. It will be seen that in the north the larger streams rise west of the ridge and valley belt and flow southeast to the Atlantic, crossing the mountain ridges one after another in *water gaps.* In the south, on the contrary, the larger streams such as the Kanawha and the Tennessee rise in the eastern ridge and flow into the Ohio to the northwest. They have cut deep gorges through the whole width of the plateau to reach that river. These gorges and water gaps are of great use to commerce by affording low routes across the mountains.

Ages ago the rock layers of the eastern half of what is now the Appalachian region were upheaved into many long folds or waves (§ 31). Most of the rock layers are soft, but some of them are very hard. The erosion of ages carried away the tops of the folds (§ 32), exposing the edges of the layers, and reduced the region to a nearly flat lowland (§ 51). Then this region was again upheaved, but so slowly that the larger streams flowing across it to the sea could cut their channels across the hard layers as fast as the region rose. The branches of the larger streams, from the right and left, rapidly eroded the soft layers as the region rose, forming the long Appalachian valleys, while the hard layers in the sides of the old folds were eroded more slowly, and were thus left projecting as the parallel, even-topped Appalachian ridges (§ 32, diagram).

In the western half of the Appalachian region the rock layers are nearly level. The surface is now composed of a hard and thick layer, which weathers very slowly, and as it rose was cut through only by the narrow valleys of the larger streams; so that this region now remains as the rough upland called the Allegheny plateaus.

The northern part of the Appalachian region was once so deeply covered by the Laurentian glacier that only the highest mountain peaks projected above the ice. The glacier widened many of the valleys, rounded and softened the mountain outlines, and left that part of the region covered with drift.

TOPICS ON THE APPALACHIAN MOUNTAINS

I. NORTHERN PART. Valleys: formation; drainage — lakes, rivers, falls. Mountains: shape; position.

II. SOUTHERN PART. Western region: height; surface. Eastern region: ridges — formation, height, shape, direction; valleys — shape, formation, chief one. Drainage: northern; southern; use of river valleys.

THE CENTRAL LOWLAND

What river system drains most of the Central Lowland in the United States? (map, p. 42). What is the largest eastern tributary of the Mississippi? Name the three largest western tributaries. What is the largest system of the Gulf slope, after the Mississippi? Name several other streams of the Gulf slope west of the Mississippi system; several east of that system.

From the Allegheny plateaus the Central Lowland slopes gently downward to the Mississippi River, where a gradual ascending slope begins, extending to the foot of the Rocky Mountains, at an elevation of over a mile.

In the main the surface of this vast region is broken only by the "bluffs," or hillsides which border the broad flood plains.

North of the terminal moraine of low, gravelly hills (map, p. 42), the country is thickly covered with glacial drift and contains thousands of lakes. This region is called the *Lake plains.*

There is also a drift-covered region south of the moraine, in which most of the glacial lakes have been

DELAWARE WATER GAP.

drained or filled with sediment. The uplands of this region, and of the country to the south and west, were grassy prairies when first visited by white men. This region is called the *Prairie plains.*

Between two lines drawn from the mouth of the Ohio, southeast and southwest, most of the Central Lowland slopes directly to the Gulf of Mexico. This region is called the *Gulf plain.* Toward the coast it is much like the Tidewater region. Through the center the mighty Mississippi meanders in a great flood plain from twenty-five to seventy miles wide (§§ 52–54).

This flood plain is one of the most fertile regions in the world, and contains many farms or plantations. As it is lower than high water in the river, embankments, or *levees,* have been built along the river banks to prevent overflows. During high water a break, or *crevasse,* sometimes occurs, and then the country far and wide is covered with water. At its mouth the river has formed a great delta (§ 57), which projects far into the Gulf beyond the even curve of its shore line.

The most rugged part of the Central Lowland is the Ozark Mountains. The Arkansas River divides these mountains into two parts. North of the river the land consists of rugged plateaus. South of it, the rocks have been folded and eroded into ranges of hills and low mountains, somewhat like the Appalachians.

A Levee on the Lower Mississippi River.

TOPICS ON THE CENTRAL LOWLAND

I. Slopes. Eastern. Western. Northern. Southern.
II. Rivers. Chief: basin; divides; branches; banks; mouth. Other rivers.
III. Regions. Lake plains: southern boundary; surface; covering. Prairie plains: limits; covering. Gulf plain: drainage; covering; coast. Mountains: position; northern part; southern part.

THE ROCKY MOUNTAIN HIGHLAND

From the map, p. 42, trace across the United States the boundary between the Central Lowland and the Rocky Mountain highland. Compare by measurement along the 40th parallel the distances from this boundary to the Atlantic and to the Pacific coast.

Near the center of the United States the Central Lowland merges into the highland which covers most of the western half of the country. This vast Rocky Mountain highland may be roughly divided into four

The Prairie Plains, Eastern Kansas.

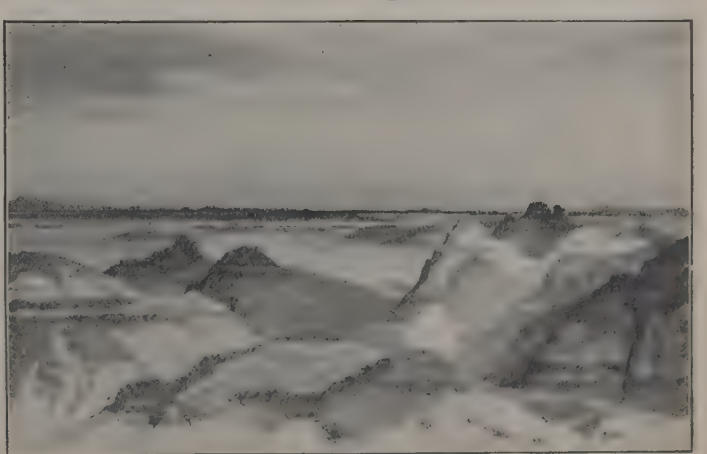
sections extending in a general north and south direction across the country: (1) the Great Plains on the east, (2) the high ranges of the Rocky Mountain chain, (3) the great plateau and basin region, and (4) the high Sierra Nevada and Cascade ranges along the western border of the highland.

As the prevailing winds from the Pacific lose most of their moisture on the west slopes of the Sierra Nevada and Cascade ranges, the highland region in general is dry, and in some parts is a desert (§ 91). The larger streams of this region are maintained by the rains and melting snow of the mountain ranges. Many of the smaller streams flow only after the occasional brief and heavy rains, or "cloud-bursts."

The *Great Plains* in general appear nearly level. Really their surface is a gradual slope upward from the Central Lowland to the base of the Rocky Mountains.

The larger streams flowing across the Great Plains are kept so choked with the sand brought in by their tributaries, that the valleys are widened faster than they are deepened, and are therefore generally broad and shallow. In some places toward the north, however, the soft rock has been worn into a maze of deep gullies, forming the "*Bad Lands.*"

The *Rocky Mountains* border the Great Plains on the west. The surface at the base of these mountains is nearly $1\frac{1}{4}$ miles high; the ranges themselves rise between one and two miles higher. The lower slopes



"Bad Lands," South Dakota.

Rocky Mountains, Montana.

are forest-clad; the jagged crests are bare rocks except when covered with snow.

From South Pass (see map, p. 42) northward the ranges are irregular in direction. Some are the remnants of rock folds, some are upheaved and tilted blocks of rock, and others are formed of old lava outflows (§ 33). South of the pass the ranges are more nearly parallel. As a rule, each range is a single broad rock fold, from which the top layers have been worn away, thus exposing the hard granite rock which now forms the higher, central part of the range. Between the ranges are wide, grass-carpeted valleys, or "parks."

The *plateau region* west of the Rocky Mountains, when upheaved, was broken into great blocks, many miles in length. Some of them were lifted higher than others, forming higher plateaus separated from the lower plateau surface by lines of cliffs. Other blocks were tilted so that the upturned edges form ranges of mountains. In this region, too, the streams have cut the deepest canyons in the world. Thus the surface of the plateau region is very uneven.

Illustrating the Tilted Block Structure of the Plateau Region.

After the upheaval of the *Columbia plateaus*, lava, forcing its way up through the fissures, spread over the surface (§ 33). Repeated outflows, meeting and overlapping, covered nearly the whole region with lava to a great depth, completely burying many of the upheaved and tilted rocks. Into this vast lava plateau Snake River has cut a narrow canyon which is in some places three fourths of a mile deep.

The *Colorado plateau* region is divided into many plateaus, some high, some low, separated by long lines of cliffs along the sides of the upheaved blocks. The region is remarkable for the deep, narrow canyons cut by the streams. These streams have been flowing in their present channels throughout much of the period of upheaval, and have deepened their channels about as fast as the surrounding country rose, and much faster than weathering could widen the valleys in that dry region (§ 50). Hence the channels have become narrow and impassable canyons, in some places over a mile deep.

The *Great Basin* lies between the Wasatch Mountains and the Sierra Nevada, and extends south to the Gulf of California. It is the driest part of the United States, and has few permanent streams. The uptilted edges of the blocks in this region have been eroded into numerous low mountain ranges. Between these are broad, level plains formed of the rock waste from the mountains. During the season of rainfall, shallow lakes form in many of these valleys; but during the dry season they evaporate, leaving their beds incrusted with salt.

About the time that the Laurentian glacier covered the eastern part of North America (§ 60), extensive lakes covered much of the Great Basin. Gradually the climate became drier, and the lakes became smaller. Great Salt Lake and a few smaller lakes are remnants of these old inland seas. Around the edges of the basin are now found several nearly level terraces which mark different heights of these old great lakes as evaporation gradually lowered their surface.

Old Lake Terraces, Utah.

The *Sierra Nevada and Cascade Mountains* are from one to two miles higher than the general surface of the plateau.

The Sierra Nevada is an enormous block of rock uptilted along its eastern edge, so that its surface slopes to the west. The dry eastern side is short and steep. The streams upon the long, well-watered western slope have cut deep canyons, leaving a succession of long mountain spurs between.

There were outflows of lava in the Sierra Nevada, but in the Cascade Mountains the outflows were so great that the tilted blocks generally are buried, and the mountains seem to be composed entirely of lava. All the principal peaks are volcanoes, some of which are probably not yet extinct. Mount Rainier, the highest, is nearly three miles high, and several of the others are high enough to be always capped with snow.

TOPICS ON THE ROCKY MOUNTAIN HIGHLAND

I. Plains and Plateaus. Eastern: surface; river valleys — south, north. Western: northern part — formation, valley; central part — limits, surface, drainage; southern part — surface, valleys, formation.

II. Mountains. Eastern: northern part — appearance, formation; southern part — ranges, valleys. Western: southern range — formation, slopes, streams; northern range — formation, peaks.

III. Climate. Regions: western; eastern; mountain ranges; Great Basin; lakes. Effect: on surface; on vegetation.

THE PACIFIC COAST REGION

What low mountains closely border the Pacific coast? What mountainous island lies at the northern end of these ranges? By what strait is it separated from them?

The narrow Pacific coast region consists of a series of low mountains which rise abruptly from the coast, and a series of broad lowland valleys which separate the coast ranges from the Sierra Nevada and the Cascade Mountains.

The *Coast Ranges* are the remains of wide rock folds. While they were being elevated they were a chain of mountainous islands, like Vancouver Island, or high peninsulas, like Lower California, and like them were bordered on the east by long narrow gulfs or sounds.

Continued elevation has brought the bottoms of these gulfs slightly above the level of the sea, forming the great *lowland valleys* of the region.

These valleys have been rendered very fertile by the fine rock waste washed into them from the bordering mountains. The California valley drains into the ocean through San Francisco Bay, which was once a strait like the present Strait of Juan de Fuca. In the north the valley is still occupied by the island-studded arm of the sea called Puget Sound.

In comparison with the Appalachians, the western highlands are very young; the mountains are among the youngest in the world. Their upheaval has occupied thousands of years, but is not yet completed. The region is still subject to earthquakes, caused by slight movements of the great blocks into which the region is broken, and some of its volcanoes still show occasional signs of activity.

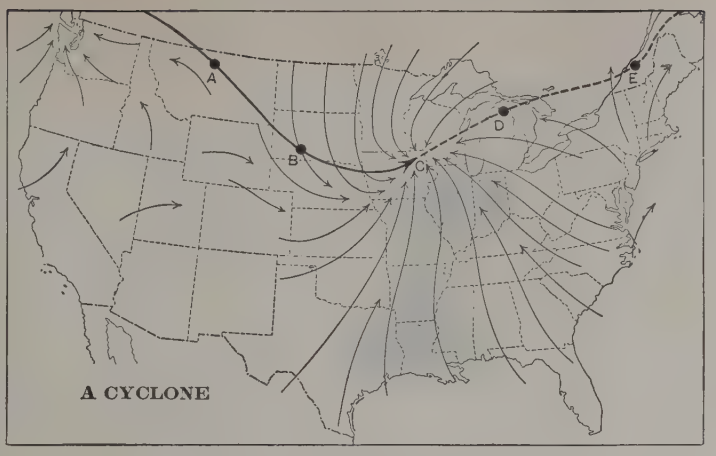
TOPICS ON THE PACIFIC COAST REGION

I. RANGES. Position. Extent. Height. Formation.
II. VALLEYS. Formation. Divisions. Drainage. Soil.

CLIMATE

The United States lies chiefly in the warmer part of the temperate zone. In summer most of the country is within the hot belt, but in winter a large part of it lies within the cold belt (§ 82), as shown on this chart (see also p. 38). As regards summer and winter temperature, there are four climatic belts or regions in the United States, as represented on the chart.

The difference in temperature between the northern and the southern part of the country is much greater in winter than in summer—the northern winters being much longer and colder than those in the south.



A CYCLONE

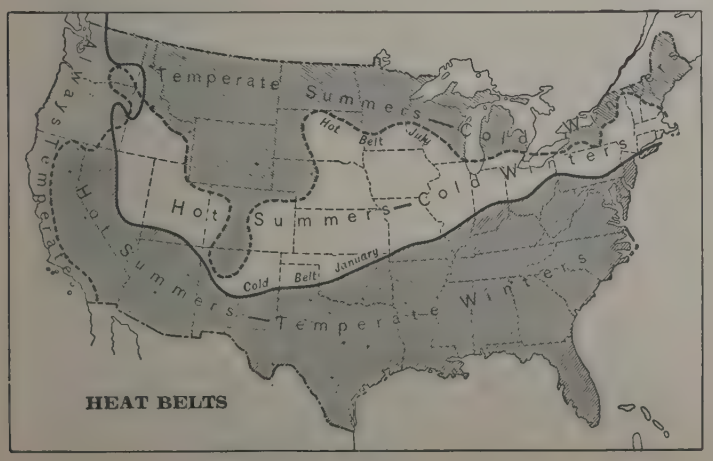
East of the Rocky Mountains, especially in the north, the weather is subject to rapid changes at all seasons. These are caused by the cyclonic storms (§ 86) which are always drifting eastward over the country.

A cyclonic storm is illustrated by the chart at the top of the page. The point of the heavy arrow lies in a storm center, around and into which the winds are whirling, as shown by the light arrows. East of the center the winds come from the south and southeast and make the weather warm. West of the center the winds come from northward and make the weather cool.

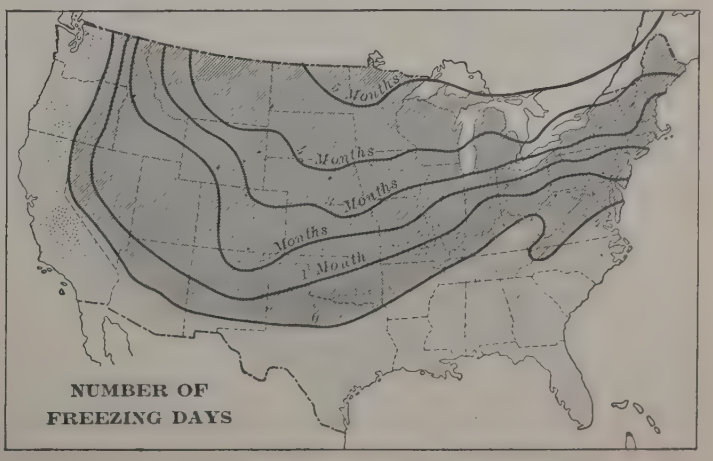
But the storm center is moving all the time. Twenty-four hours before it reached *C* it was at *B*; and a day's drifting from *C* will *probably* carry it to the neighborhood of *D*. Thus, as the storm drifts rapidly eastward over the country, it carries warmer weather in front of it, and is followed by colder weather.

In the eastern half of the country the southerly winds in front of the cyclone are vapor-laden when they leave the Gulf of Mexico, but are chilled as they advance northward; hence cloudy, rainy, or snowy weather sweeps over the country in front of the cyclone. When

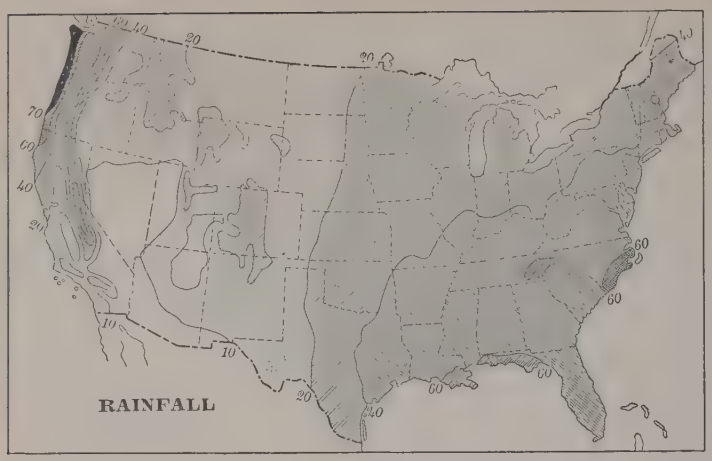
In the right-hand chart below, the dotted region has no day in the year whose average temperature is below freezing. The number of freezing days in a year increases northwardly over the region shown by the shaded portion of the chart, the first line showing where there are thirty days of freezing weather, the second line sixty days, and so on.



HEAT BELTS



NUMBER OF FREEZING DAYS

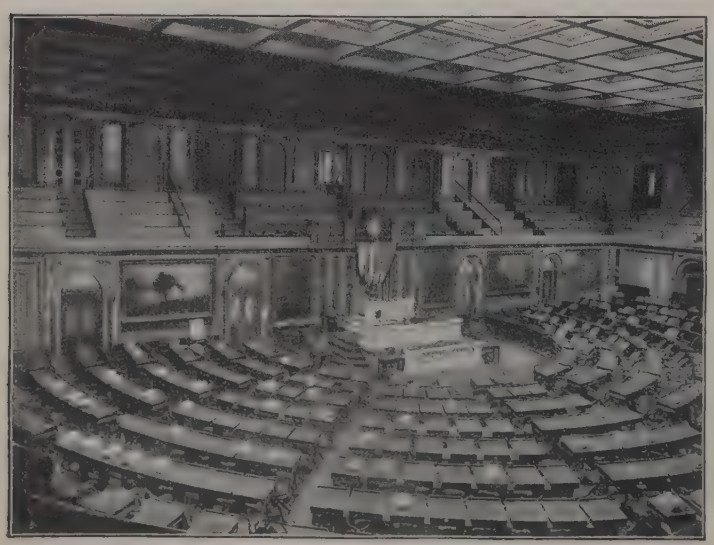


the storm center is far west of the Gulf, however, the southerly winds in front of it come from dry highlands and give but little rain to the western half of the United States. The winds on the western side of the storm center grow warmer as they advance southward, and hence (§ 89) bring clear, dry weather.

In the chart above, the regions shaded by lines would each year be covered more than twenty inches deep by the rainfall, if the water remained where it fell. This amount is ample for almost all kinds of farming. In the parts of the United States shown by dots, or left unshaded, the rainfall is less than twenty inches, and as a rule irrigation is necessary for farming. Explain why the Pacific coast region has a heavier rainfall (p. 46).

Cyclones follow one another so rapidly that there are almost always one or more storm centers in the United States. The observers of the United States Weather Bureau take daily observations of the weather in different parts of the country, by which they are able to locate the existing storm centers, and by judging in what direction, and how far, the cyclone, with its warm wave, cold wave, and rain and cloud regions, will advance during the next twenty-four hours, they are able to determine the "weather probabilities" for the following day.

Supplemental Work. Read chapter 11, on Weather and Weather Predictions, in Waldo's "Elementary Meteorology."



HOUSE OF REPRESENTATIVES, WASHINGTON, D.C.

GOVERNMENT

When the thirteen English colonies became independent (p. 41), each formed a *state government*, which deals with local matters only. But the thirteen states united to form a single republic (§ 125) under a *Federal government*, which deals with matters of interest to more than one state.

The land between the Appalachian Mountains and the Mississippi River was then unsettled. Most of it was given up to the Federal government, and, with most of the region afterward acquired by the United States west of the Mississippi River, was known as *public land*. The Federal government divided this public land into great tracts called *territories*. When enough people had settled in a territory, it was admitted to the Union as a state. There are now forty-six states and the territories of Arizona and New Mexico in the main body of the country, besides outlying territories and dependencies.

The Federal Government has three great branches. These are (1) a law-making, or *legislative*, branch, called *Congress*, to which each state sends one or more representatives and two senators, chosen directly or indirectly by the people of the state; (2) a law-enforcing, or *executive*, branch, at the head of which is the *President*, who is elected every four years; (3) a law-explaining, or *judicial*, branch, consisting of *Federal courts* presided over by judges who are appointed for life.

Congress meets, the Supreme Court has its sessions, and the President lives in Washington city, which is therefore the capital of the United States. Congress and the Supreme Court meet in the Capitol. The residence of the President is called the White House.

The executive branch of the government is divided into nine great departments, the heads of which are the President's chief advisers, and form his *Cabinet*. The Secretary of State has charge of our foreign ministers and consuls and all the government's business with foreign countries. The Secretary of the Treasury controls the collection, payment, and coinage of money for the government. The Secretaries of

WHITE HOUSE, WASHINGTON, D.C.

CAPITOL AT WASHINGTON.

War and the Navy control the army and the navy. The Attorney-General is the government's chief lawyer. The Postmaster-General controls the post offices of the country, the carrying of the mails, and the manufacture and sale of postage stamps. The Secretary of the Interior has charge of the surveying and sale of the public lands, of pensions, of patents, and of Indian affairs. The Secretary of Agriculture has charge of the Weather Bureau, and collects and publishes information about the crops, domestic animals, and forests, and the conditions favorable or unfavorable to them. The Secretary of Commerce and Labor collects and publishes information about fisheries, mines, manufacture, commerce, and labor, and has charge of the lighthouses.

The State Governments are similar to the Federal government. Each has a law-making branch, usually called a *legislature*, composed of senators and representatives; a law-enforcing branch, composed of a *governor* and his assistants; and a law-explaining branch, consisting of the *state courts*, presided over by judges. These officers are generally elected by the people of the state, though in some states the judges are appointed.

The Territories and Dependencies are controlled by Congress. The people of a territory are allowed to elect their own legislature, but the governor and judges and other officers are appointed by the President, and Congress may set aside laws made by the territorial legislature. Each territory sends to Congress a delegate who may speak, but has no vote.

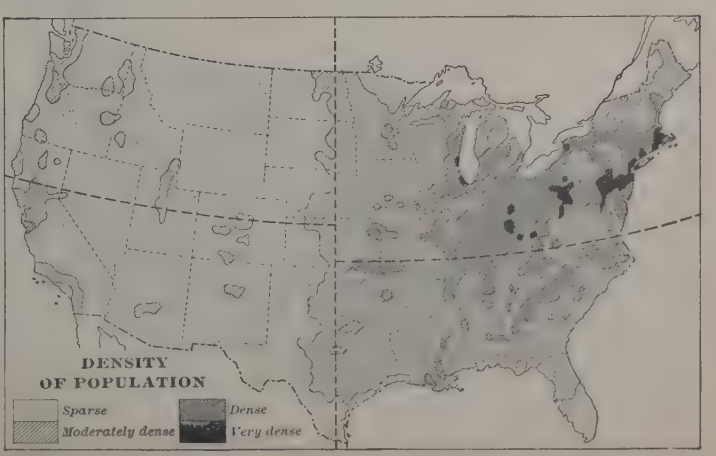
Supplemental Work. Count the number of stripes and of stars in our flag. What do they represent? Find the names of the present President and his Cabinet. Read chapters 2, 3, and 4, "Carpenter's Geographical Reader, North America."

POPULATION AND PROGRESS

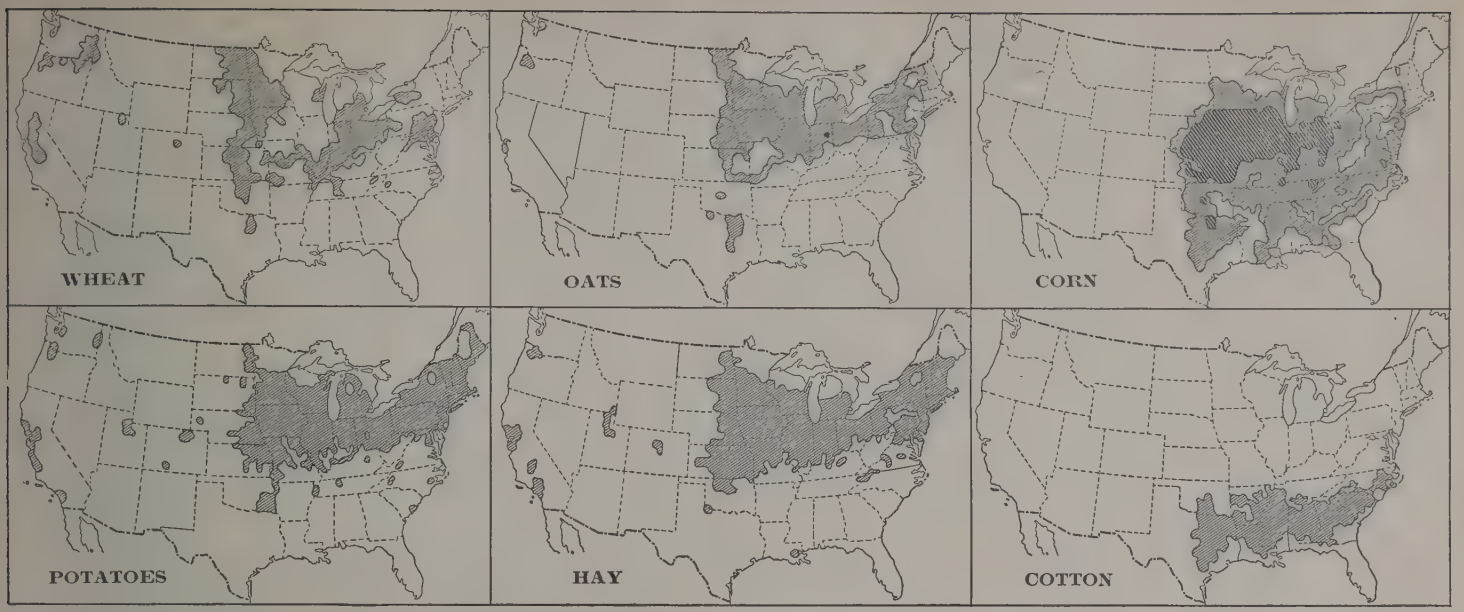
Population. On this population map the United States has been roughly divided into quarters by heavy broken lines. It will be seen that the northeastern quarter is more densely peopled than the southeastern, and that the two eastern quarters have a denser population than the two western quarters with their drier climate (pp. 41, 48). The eastern half of the United States contains nearly nine tenths of the people in the country.

At the end of the Revolutionary War there were about four million people in the United States, mostly near the Atlantic coast. Now the population is twenty times as great and has spread over nearly the whole country. This represents a greater increase and more rapid spread of population than has ever been known before in the history of the world. Millions of people, attracted by the cheap and fertile lands and the great opportunities under a free government, have left their homes in Europe to settle in the United States, and thousands of others are coming every year.

People have come from all countries, but mostly from Great Britain, Ireland, Germany, Italy, and the Scandinavian countries. Whatever their nationality, however, they soon adopt our language, manners, and customs, and become thorough *Americans*.



Map Exercise. Name and locate six states lying entirely east of the Hudson River. Name and locate seven states between the Hudson River and Chesapeake Bay which are bordered by the Atlantic or crossed by the Appalachian Mountains. Name and locate six states between these and the Mississippi River. Which of them border on the Great Lakes? Which of them border on the Ohio River? Name and locate seven northern states between the Mississippi River and the Great Plains. Name and locate seven southern states lying entirely east of the Mississippi River. Which of them border on the Atlantic? Which border on the Gulf of Mexico? Which one has no coast? Name and locate four southern states between the Mississippi River and the Great Plains. Name and locate three states and one territory which are crossed by the Rocky Mountains. Name and locate three states and one territory lying on the great plateaus west of the Rocky Mountains. Name and locate three states which border on the Pacific.



Most of the immigrants have landed in the northeast, and moved inland, seeking work and homes. Hence the northeastern quarter of the country is most densely settled, and has the largest foreign population.

In the southeastern quarter there are not many foreigners, but there are about as many negroes in that region as there are foreigners farther north.

In the thinly settled region of the west there are some Indians, but there are many more whites than Indians.

On the Pacific coast there is a large foreign population, mainly Europeans, but about one eighth of the foreigners are Chinese.

Progress. Although the United States is one of the youngest of nations, it is one of the greatest. It has an enormous territory, and a highly civilized and energetic people, all speaking the same language.

Industries of all kinds have increased in this country even more rapidly than the population. Not only is the total product of *all* the seven chief industries pursued by man (§ 127) greater in this country than in any other, but the product of *each* of these industries is greater than in any other nation.

Many articles are produced in such large quantities that there is sufficient to supply the wants of the great population and to leave a surplus for export to other countries where the article is needed. Thus the people of nearly every country in the world have come to rely upon the workmen of the United States for some of the necessaries of life.

Supplemental Work. Read chapters 1, 4, and 15 in "Children's Stories of American Progress," by Henrietta Christian Wright.

Before taking the following lessons devote several days to the study of the map on the opposite page, until you can name or locate without hesitation any state or territory on the little production maps above.

PRODUCTION

Agriculture is confined mainly to the eastern half of the country and to the Pacific coast region, where the annual rainfall exceeds twenty inches (p. 48). More of our people are engaged in farming than in any other occupation. Corn, hay, cotton, wheat, oats, and potatoes are the principal crops, and they comprise more than three fourths of the value of all the agricultural productions.

Practically all the cotton is produced in the southeastern quarter of the country, but the other five great crops are produced chiefly in the northeastern quarter, as shown on the production maps above.

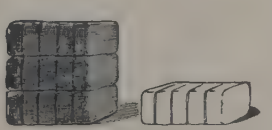
THE WORLD'S CORN CROP.

Corn is much the largest and most valuable crop. It is chiefly fed to live stock, though great quantities are used for human food, and for distilling into spirits. Corn is the only great crop that is widely grown both north and south, but the chief corn belt lies in the northern Mississippi valley. The diagram shows the proportion of the world's corn crop raised in the United States.

Wheat, used chiefly as food for man, is one of our most important crops. It does not require as hot summers as corn, and hence thrives farther north. The diagram shows the proportion of the world's wheat crop raised in this country.

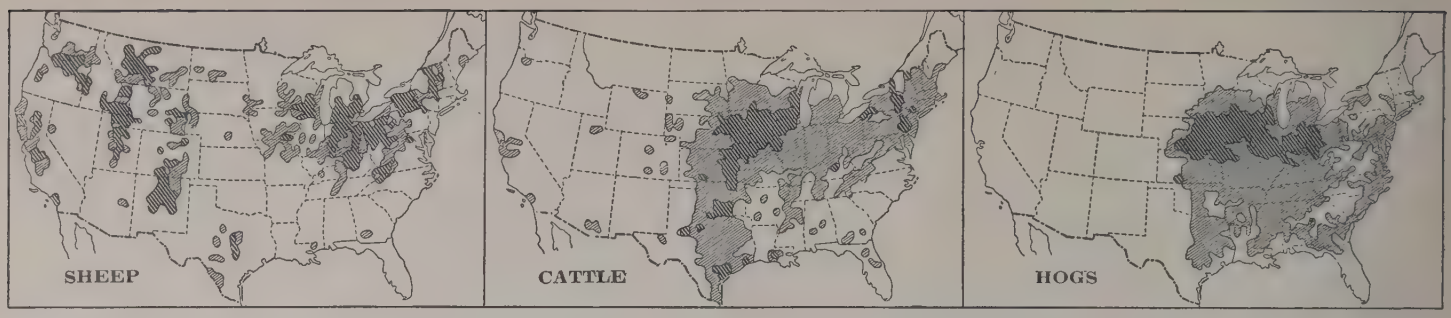
THE WORLD'S WHEAT CROP.

Cotton is a peculiarly important crop. More cloth is made from cotton than from any other material, and the bulk of the world's cotton supply comes from the United States (see diagram).



THE WORLD'S COTTON CROP.

The minor agricultural products of the United States are very numerous, and many of them are quite important, as fruits, vegetables, tobacco, barley, and sugar cane.



Herding. Nearly half of the hogs and about one fourth of the cattle in the world are raised in the United States. From them is obtained so large a surplus of pork and beef that, after cotton, meat is our greatest export. Horses and sheep are raised in great numbers, but scarcely in excess of our own wants.

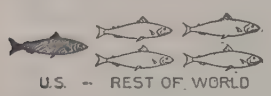
THE WORLD'S PRODUCT OF CATTLE AND HOGS.

As shown on the maps above, the distribution of hogs conforms closely to the corn region, while the area of cattle conforms more nearly to the hay region, with a broad southwestward extension over the grassy plains of Texas to the Gulf coast.

Most of the horses are raised in the oat-producing region, though some localities not in this region are noted for horse-breeding.

Sheep, while used for mutton, are chiefly valuable for their yield of wool. Fleeces grow thickest in a rather cool climate, hence the great sheep ranges are in the northern part of the eastern lowland, in the western highlands, and on the Pacific coast.

Fishing. The fish product of the United States is more valuable than that of any other nation. The diagram shows the proportion of the world's catch obtained by our fishermen. Oysters and codfish from the northeast coast and salmon from the northwest coast are the most important products.

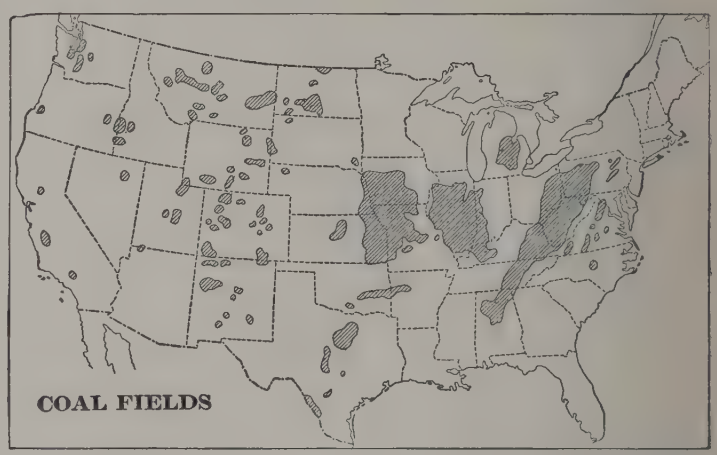


FISHERIES OF THE WORLD.

Lumbering. Fully one third of the timber cut in the world each year comes from the forests of the United States. Lumber, in the shape of logs, beams, boards, and shingles, forms one of our important exports. The map shows the regions which contain the most continuous forest areas. The densest forests are those near the Pacific coast.

LUMBERING OF THE WORLD.

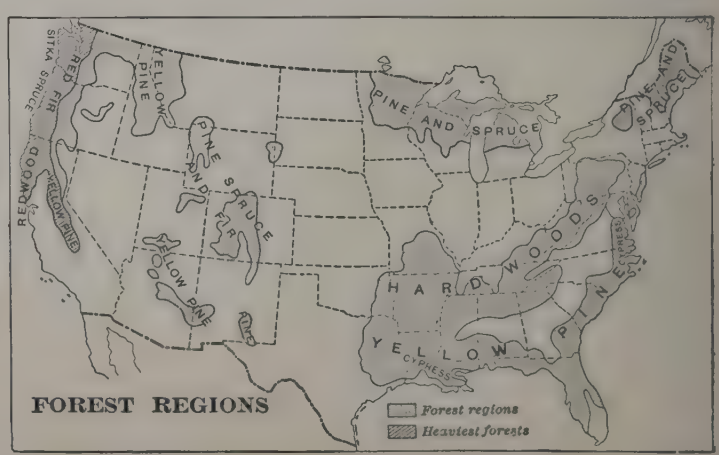
Mining. The mines of the United States are among its most valuable resources, and yield about one third of the mineral product of the world. By far the most valuable of the mineral productions are coal and iron; then follow in value petroleum, copper, gold, and silver. The yield of each of these is enormous. The petroleum and copper amount to more than half of the world's supply, and these two minerals, together with coal, are important articles of export.



Coal is mined mostly in three extensive fields in the eastern half of the country. Three fourths of our coal comes from the large eastern field and the small detached fields northeast of it; most of the remainder comes from the large middle and western fields.

THE WORLD'S OUTPUT OF COAL.

Iron ore is found in nearly every state, but about two thirds of our product is mined near the south and west



THE WORLD'S OUTPUT OF IRON ORE.

shores of Lake Superior, and most of the rest is mined in the worn-down rock folds of the Appalachian ridges.

Petroleum is widely distributed, but the chief sources of supply occur (1) near the northwestern part of the great eastern coal field; (2) near the western edge of the large western coal field; (3) near the Gulf of Mexico; and (4) in the extreme southwest.

Gold and *silver* are mined chiefly in the Rocky Mountains and the Sierra Nevada, while by far the greater part of the *copper* comes from two small clusters of mines, one near the south shore of Lake Superior and the other near the source of the Missouri River.

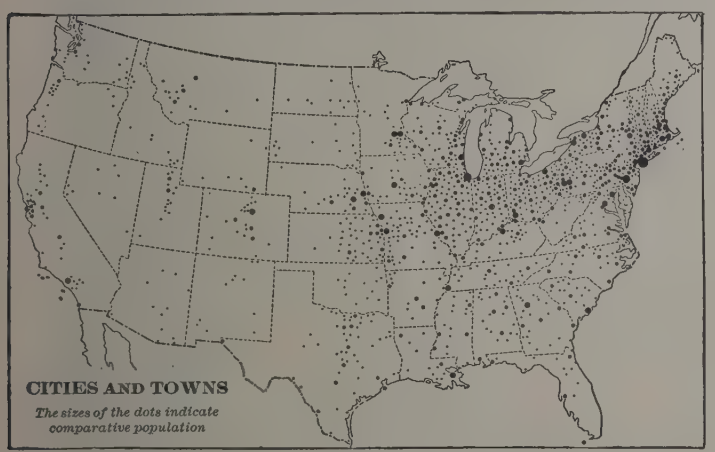
THE WORLD'S OUTPUT OF GOLD AND SILVER.

MANUFACTURING AND COMMERCE

Manufacturing. The United States is the greatest manufacturing country in the world. Nearly every kind of article wanted by civilized man is manufactured in our country, and nearly always more cheaply here than anywhere else. The greatest manufactures are iron and steel goods, packed meats, cloth and clothing, lumber, flour and corn meal, liquors, shoes and leather goods.

THE WORLD'S MANUFACTURES.

Manufacturing is carried on chiefly in cities and towns. On this map the cities and towns of the United States



are shown by dots, the larger dots standing for the larger manufacturing centers. About nine tenths of the manufacturing is done in the northeastern quarter of the country. In the extreme northeast, where the towns are very numerous, this industry is particularly active.

In the northeast, cloth, boots and shoes, clothing, fine machinery, books and paper, are leading products. West of the Appalachian Mountains lie the great coal fields, while the greatest iron ore beds lie near Lake Superior. To smelt the iron from the ore, much fuel is necessary, and as the ore can be transported cheaply by water, the regions where the great coal fields approach the Great Lakes have become the most important centers of the iron and steel industry. Meat packing and the manufacture of flour, liquors made from grain, and lumber are also carried on chiefly west of the Appalachian Mountains, in the region where the raw material is produced.

Commerce. The collection of raw materials from the various parts of the United States at the points of manufacture or export, the distribution of the manufactured products, and the importation and distribution of goods not produced in the country give rise to a commerce greater than that of any two other nations in the world.

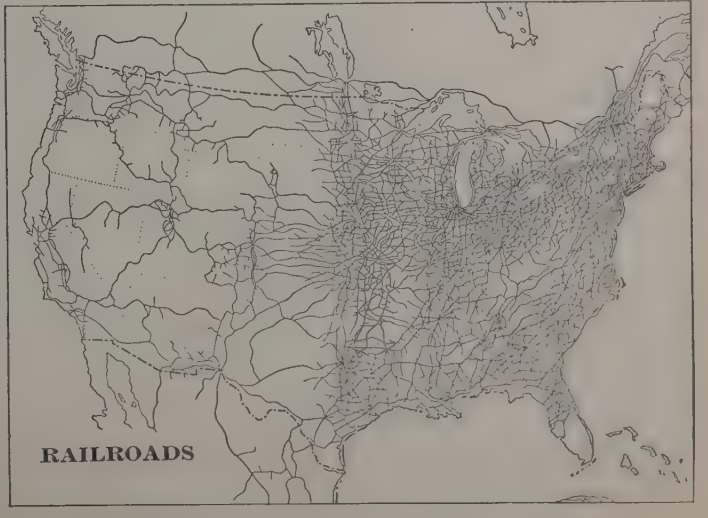
THE WORLD'S COMMERCE.

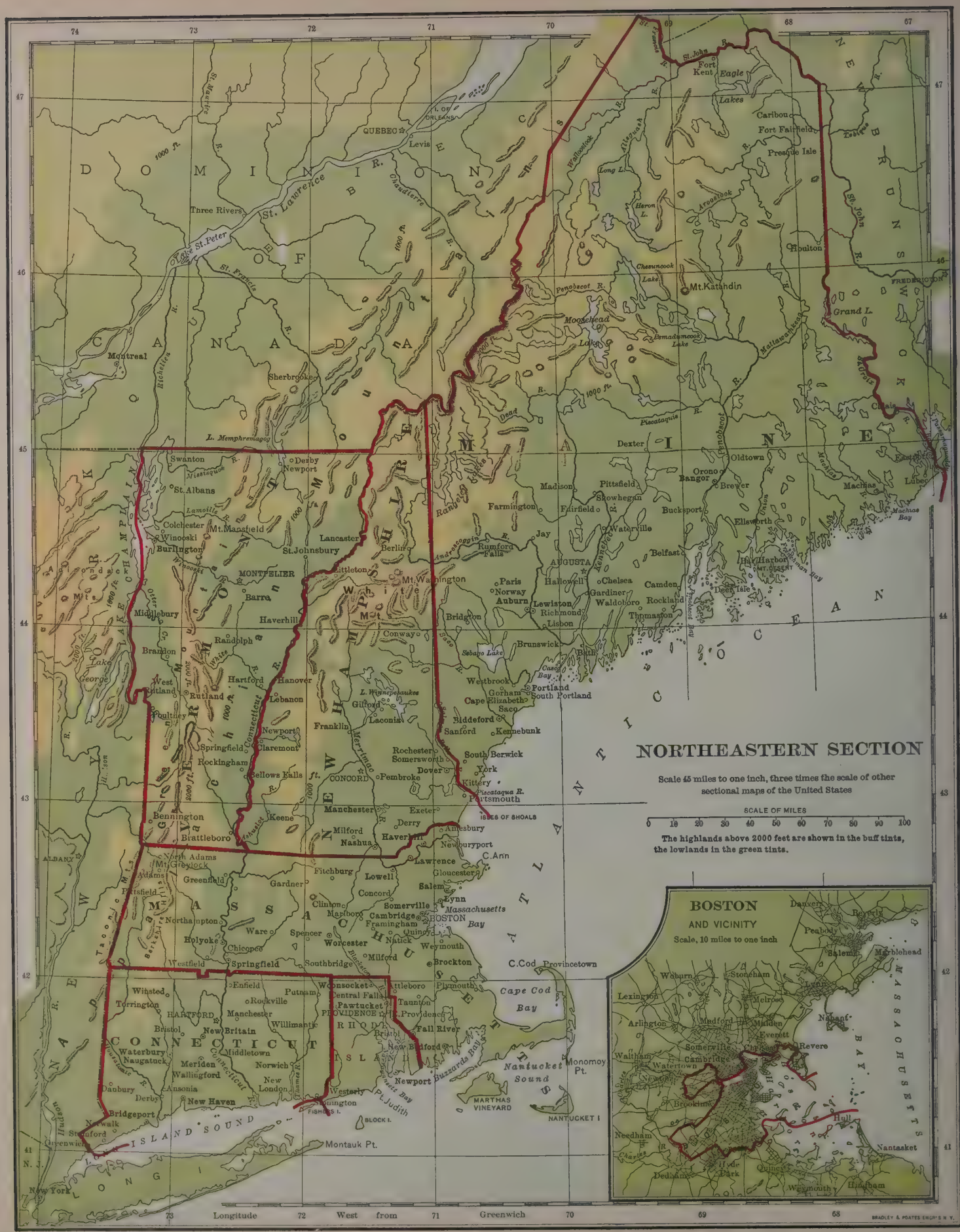
Although our *foreign* commerce is exceeded by that of only one or two other countries, it forms but one tenth of our *total* commerce. Considerably more than half of our exports consist of raw cotton, meat and breadstuffs, iron and steel manufactures, and kerosene.

Our chief imports are raw fibers (silk, wool, etc.), cloth, sugar, and coffee. Among other imports are drugs and chemicals, hides, and India rubber.

Fully three fourths of the merchandise which enters into the commerce of this country is transported by railroad, and but one fourth by boats on the oceans and lakes which border the country, or on the rivers and canals which traverse it. Nearly half of the world's length of railroad is in the United States. How does the distribution of railroads compare with the distribution of population? (map, p. 49.) Commerce is greatest in the quarter of the country where there are most railroads and the densest population.

Supplemental Work. Read chapters 5, 10, and 12 in Wright's "Children's Stories of American Progress." Read sections 280 to 286 and chapter 22 of McMaster's "School History of the United States."

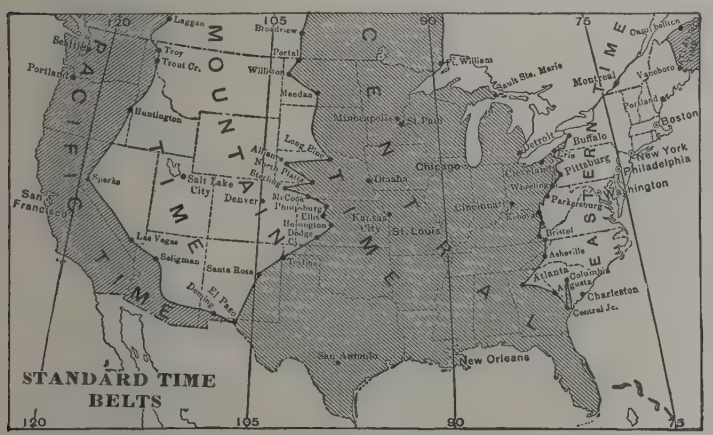



NORTHEASTERN SECTION
Scale 45 miles to one inch, three times the scale of other sectional maps of the United States
SCALE OF MILES
0 10 20 30 40 50 60 70 80 90 100
The highlands above 2000 feet are shown in the buff tints, the lowlands in the green tints.
BOSTON
AND VICINITY
Scale, 10 miles to one inch
DOMINION OF CANADA
NEW BRUNSWICK
MAINE
NEW HAMPSHIRE
VERMONT
MASSACHUSETTS
RHODE ISLAND
CONNECTICUT
NEW YORK
ATLANTIC OCEAN
Bay of Fundy
Gulf of St. Lawrence
Lake Champlain
Lake George
Long Island Sound
Cape Cod Bay
Massachusetts Bay
Buzzards Bay
Nantucket Sound
Montreal
Quebec
Levis
Three Rivers
Sherbrooke
Fort Kent
Eagle Lakes
Caribou
Fort Fairfield
Presque Isle
Houlton
Mt. Katahdin
Grand L.
Moosehead Lake
Chamouchouan Lake
Chesuncook Lake
Long L.
Heron L.
Dead River
Kennebec R.
Penobscot R.
St. John R.
St. Francis R.
Chaudiere R.
Richelieu R.
St. Maurice R.
Ottawa R.
Connecticut R.
Merrimac R.
Androscoggin R.
Piscataqua R.
Saco R.
Presumpscot R.
Union R.
Machias R.
Passamaquoddy Bay
Machias Bay
Frenchman Bay
Penobscot Bay
Casco Bay
Sebago Lake
L. Memphremagog
L. Winnepesaukee
Swanton
Derby Newport
St. Albans
Colchester
Winooski
Burlington
Mt. Mansfield
Lancaster
St. Johnsbury
Berlin
Littleton
Mt. Washington
White Mts.
Barre
Montpelier
Middlebury
Haverhill
Randolph
Brandon
Hartford
Hanover
West Rutland
Rutland
Lebanon
Poultney
Springfield
Claremont
Rockingham
Bellows Falls
Gilford
Laconia
Franklin
Meredith
Rochester
Somersworth
Dover
Pembroke
CONCORD
Kittery
Portsmouth
Isles of Shoals
Manchester
Exeter
Derry
Amesbury
Keene
Milford
Nashua
Haverhill
Newburyport
Bennington
Brattleboro
North Adams
Mt. Greylock
Adams
Greenfield
Fitchburg
Gardner
Lowell
Lawrence
Gloucester
Salem
Lynn
Concord
Clinton
Marlboro
Somerville
Cambridge
BOSTON
Framingham
Quincy
Northampton
Ware
Spencer
Worcester
Natick
Weymouth
Holyoke
Chicopee
Springfield
Westfield
Southbridge
Milford
Brockton
C. Cod
Provincetown
Plymouth
Cape Cod Bay
Enfield
Putnam
Woonsocket
Central Falls
Pawtucket
PROVIDENCE
Taunton
E. Providence
Fall River
Winsted
Torrington
Rockville
Manchester
HARTFORD
Willimantic
Bristol
New Britain
Middletown
Waterbury
Naugatuck
Meriden
Wallingford
Norwich
New London
Danbury
Derby
Ansonia
New Haven
Bridgeport
Norwalk
Stamford
Greenwich
New York
Westerly
Block I.
Fishers I.
Newport
Pt. Judith
Montauk Pt.
Martha's Vineyard
Nantucket I.
Monomoy Pt.
Nantucket
Danvers
Beverly
Peabody
Salem
Marblehead
Waburn
Stoneham
Lynn
Lexington
Melrose
Arlington
Medford
Malden
Everett
Revere
Somerville
Cambridge
Waltham
Watertown
Newton
Brookline
Needham
Dedham
Hyde Park
Quincy
Weymouth
Hingham
Hull
Nantasket
Longitude West from Greenwich
BRADLEY & POATES ENGR'S N.Y.

COMMERCIAL AND INDUSTRIAL SUBDIVISIONS

Review the lesson on longitude and study the supplemental work (p. 7). In about what longitude is Philadelphia in Pennsylvania? (See map below.) New Orleans in Louisiana? Denver in Colorado? Santa Barbara on the Pacific coast? When it is noon at Philadelphia what time is it at New Orleans; at Denver; at Santa Barbara?

Standard Time Belts. The main body of our country is so broad from east to west that more than three hours are required for rotation to carry it past the sun. When it is noon at Philadelphia, it is an hour before noon at New Orleans; two hours before noon at Denver; and three hours before noon at Santa Barbara. Hence, if we are told that a railroad train starts "at noon," we can not be sure of its time of starting, because it is noon at different places in the country for more than three hours after noon occurs on the Atlantic coast.



STANDARD TIME BELTS

To avoid mistakes, delays, and confusion, the railroad companies of the country have adopted the times of the meridians of 75°, 90°, 105°, and 120° as the standards by which to run their trains. Thus, on most of the Atlantic coast the standard time of the railroads is that of the meridian of 75°, called "Eastern time"; throughout most of the Mississippi valley the standard is that of the meridian of 90°, called "Central time"; in the Rocky Mountain region the time of the meridian of 105° is standard for the railroads and is called "Mountain time"; and on the Pacific coast the standard is the time of the meridian of 120°, called "Pacific time."

There is a difference of one hour in standard time between each two adjacent "standard time belts"; hence a traveler whose watch marks railroad time in one part of the country can easily tell from it the correct railroad time in any other part by adding or subtracting the proper number of full hours.

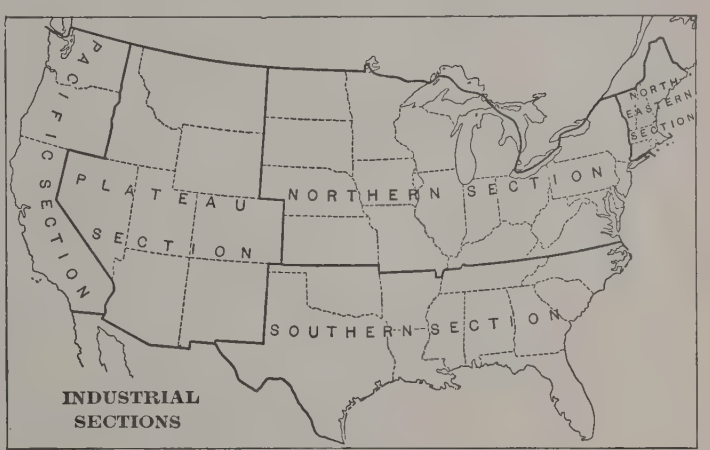
Each railroad makes the change of standard time at some station where the locomotives and train crews are changed; and as such stations on different roads are seldom on the same meridian, the edges of the time belts are irregular. In the extreme southwest, Mountain time is not used, but a change is made from Central time directly to Pacific time. What is the amount of this change?

International Date Line. Suppose that two men, starting from the prime meridian on Monday noon, travel the one eastward and the other westward, each traveling just as fast as the earth rotates. The man who goes west keeps exactly beneath the sun all the time, and it seems to him to be still Monday noon when he reaches his starting point again twenty-four hours later. He has *lost* a day in his reckoning by traveling westward around the earth.

The other man travels eastward over the earth as fast as the earth itself turns eastward, and therefore he moves away from the sun twice as fast as the prime meridian does. He therefore gains a day in his reckoning by traveling eastward around the earth.

To correct such errors in their dates, navigators usually add a day to their reckoning when they sail westward across the meridian of 180°, and subtract a day when they cross it to the eastward, and so the meridian of 180° is sometimes called the *International date line*.

Industrial Sections. We have seen that, owing largely to differences in relief, climate, and soil, the great productions of our country are confined more or less definitely to different regions. Hence the United States may be naturally separated into (1) the Northeastern, or cloth-manufacturing section; (2) the Northern, or food-, iron-, and coal-producing and manufacturing section; (3) the Southern, or cotton-producing section; (4) the Plateau, or grazing and gold- and silver-mining section; and (5) the Pacific, or Western food- and gold-producing section.



INDUSTRIAL SECTIONS

TOPICS ON RESOURCES AND PEOPLE

I. PEOPLE. Races: whites, negroes, Indians, Chinese, — distribution of each. Population: increase; distribution. Government: origin; Federal; state; territorial.

II. ADVANTAGES. Soil: alluvial; glacial. Climate: heat regions — northern, central, southern, western; length of winters; rainfall regions; influence of cyclones. Manufacturing facilities: streams; minerals. Transportation facilities: railroads; rivers.

III. PRODUCTS. Food: vegetable — regions, amount, kinds; animal — kinds, regions, amount; manufactures. Fibers: vegetable; animal; manufactures from. Timber: regions; amount. Minerals: regions; kinds; amounts.

IV. EXPORTS. Natural products. Manufactured products.

THE NORTHEASTERN SECTION

What states compose this section? What large river basin is north and what waters south and east of it? How does the distance of the section from the equator compare with its distance from the north pole? Locate the Green Mountains; the Berkshire Hills; the White Mountains; Mount Katahdin. Locate the chief lakes. Name the chief rivers, and locate their sources, courses, and mouths.

The six states in the extreme northeastern part of our country are often called New England. The surface in general is hilly, while the northwestern part of the section is traversed by the northern ranges of the Appa-

LUMBERING, MAINE.

lachians. Of these the Green Mountains are the most continuous, and the White Mountains, east of Connecticut River, are the highest.

The section is less suited to agriculture than any other part of the eastern lowlands. The valleys of the larger rivers are fertile, but over much of the uplands the soil is thin, unproductive, and covered with glacial bowlders. In the northern part are extensive forests. Such crops as hay, apples, potatoes, and tobacco are raised in the valleys. Market gardening and dairying are carried on. The greater part of the food used by the people, however, comes from the West.

The numerous waterfalls of this section (p. 43) afford excellent water power, and manufacturing has become the chief occupation. Steam power is now largely used, however, coal for fuel being brought chiefly by sea from the ports of Chesapeake and Delaware bays.

The section produces practically no coal or raw materials, other than stone and wood; hence the articles manufactured are those which have a high value in comparison with that of the fuel and material used.

The chief manufactures are cotton and woolen cloth and boots and shoes, of which this section produces more than all the rest of the country. Other characteristic manufactures are brass goods, paper, wood pulp, light hardware, fine machinery, fire-arms, clothing, silk, jewelry, and rubber goods.

Over half the granite and marble, and much of the slate, used in the country are quarried in New England.

Southern New England is the most densely peopled part of the United States. More than half the people there live in cities.

To supply the needs of the dense manufacturing population, the southern half of the section is covered with a network of railways, which connects it with the south and west, and also with the railway systems of Canada. The glacier-carved fiords and bays of the New England coast contain many fine harbors, from which vessels carry on an active coasting or fishing trade; and Boston maintains a large foreign commerce.

The care of "summer boarders" is an important occupation several months each year throughout New England, especially along the seashore and in the beautiful mountain and lake regions.

While the greater part of the population is native-born, there are many foreigners, largely Canadians, Irish, and English. As a whole the people are energetic and well educated, and they maintain fine public school systems. There are also located in this section several of the oldest and most noted universities and colleges in the country.

Maine. Bound Maine. How does this state compare with the rest of New England in size? How does it compare in size with the state in which you live (p. 50)? Describe the surface of Maine; its rivers; its coast. Name and locate the capital and the five chief cities of the state.

Maine belongs to the forest region of New England, about half of its surface being covered with pine, spruce, hemlock, and birch. These forests furnish lumber and the wood pulp used to make paper. Hay, potatoes, oats, and apples are the more important farm products. Quantities of granite and slate are quarried, and much ice is cut for shipment. Herring and cod are caught along the rocky coast, and on the shore of the sheltered bays are many herring-curing establishments (§ 131, p. 32).

Portland, the chief seaport and most important city, is connected by rail with the principal railway systems of Canada. It has a fine harbor with an important foreign commerce when the St. Lawrence is frozen. Its extensive manufactures include clothing, machinery, lumber, and boots and shoes. At *Lewiston* cotton and woolen goods are made. *Bangor*, at the head of navigation on the Penobscot, has shoe factories and is one of the great lumber depots of the country. *Biddeford* has large cotton mills. *Auburn* has large boot and shoe factories. At *Augusta*, the capital, cotton goods and shoes are manufactured.

MARBLE QUARRY, NEAR RUTLAND, VT.

Woolen Mill, Dover, N.H.

New Hampshire. By what is New Hampshire bordered? How does it compare with Maine in size? What two rivers drain the larger part of it? What mountain group is in the north? Name the chief peak. Name and locate the largest lake; the capital; three other cities.

New Hampshire, often called the "Switzerland of America" because of its beautiful mountain scenery, has large forests and great granite quarries, both of which give rise to important industries. The chief industry, however, is manufacturing, which is largely carried on in the southern part of the state, where the water power of the Merrimac River is available. In the manufacture of boots and shoes this state takes high rank.

Manchester and *Nashua*, located at falls on the Merrimac, have large cotton mills. *Concord*, the capital, has cloth mills, wagon and carriage factories, and granite quarries. The fine water power at *Dover* is utilized by large cotton and woolen mills.

Gun Factory, Springfield, Mass.

Vermont. What lake and river form nearly half the boundary of Vermont? What states and country border it? Has Vermont a seaport? Draw the main divide of the state. Name and locate the mountains of Vermont; the capital; the two chief cities.

The rounded summits of the Green Mountain range are covered with forests of evergreen pines and spruces. Vermont means "Green Mountain." There are many dairy farms and sheep ranges, and fine breeds of live stock are kept. Much hay is produced. Lumber is obtained from the forests, and more maple sugar is produced than in any other state. From Vermont come much granite and slate, and over half the marble quarried in the United States. Lumber, woolens, musical instruments, and scales are manufactured. There is considerable trade with Canada through Lake Champlain.

Burlington, the chief city, has a fine harbor and is an important lumber market. Near *Rutland* are the largest marble quarries in the world, and the notably white and durable marble gives rise to an extensive manufacture of monuments and tombstones.

Massachusetts. What states and waters border Massachusetts? Describe its coast; its surface. Name and locate its mountains; rivers; capes; bays; islands. Name and locate its capital; five other cities not far away; three cities on the Merrimac; two in southern Massachusetts; two on the Connecticut River; one in the central part of the state.

Massachusetts is one of the wealthiest states of the Union, although one of the smallest. It is very densely peopled. Manufacture and commerce are the leading industries. In this state are manufactured nearly half of the boots and shoes, and a large part of the cotton and woolen cloth and paper made in the United States. The commerce, both foreign and domestic, is very large. Many vessels enter the harbors, and the eastern part of the state is thickly intersected by railroads from the north, the west, and the south.

Massachusetts is foremost among the states of the Union in the quarrying of granite and in the value of cod fisheries.

Shoe Factory, Lynn, Mass.

Boston is the great commercial center for nearly the whole of New England, receiving and distributing throughout the section raw materials, — wool, cotton,

hides, leather, rubber, and coal, — and receiving in return manufactured goods for distribution by sea or by railroad. It owes its growth and importance chiefly to the great size, depth, and excellence of its island-studded harbor at the head of Massachusetts Bay.

PUBLIC LIBRARY, BOSTON, MASS.

On the east water front are the great docks where foreign commerce is carried on; the mouth of Charles River, to the north, is used more for the coast trade. Nearly the whole steam railroad system of the section and many electric lines radiate from the city.

Boston is one of the great manufacturing centers of the United States; the making of clothing, fine machinery, and books are leading industries.

Because of the fine schools, colleges, and libraries there, and the great number of authors, musicians, and artists who have lived in or near the city, the citizens often call Boston the "Athens of America."

Boston is one of the oldest of the great American cities. The original Puritan settlement was on a small peninsula between Charles River and the harbor. On this peninsula there were three hills, and between them and the mainland were wide salt marshes which were flooded by the tides, so that at high water the peninsula was connected with the mainland only by a long, narrow "neck" of land. The marshes have been filled, and the newly made land and much of the mainland over which the city has spread have become fine residential quarters, while most of the old peninsula is given up to business.

Worcester is a great railroad center, and is noted for the manufacture of machinery, shoes, and wire. At *Cambridge* is located Harvard University, the oldest and one of the largest in the country. *Fall River*, *Lowell*, and *New Bedford* are the great centers of cotton manufacture; *Lawrence*, of both cotton and wool; at *Lynn*, *Brockton*, and *Haverhill* millions of boots and shoes are made; and at *Springfield* is a United States arsenal and factory for firearms. *Holyoke* has large paper mills. *Salem* has large tanneries.

Connecticut. By what states and waters is Connecticut bordered? Describe its surface; drainage; coast. Name and locate the capital; the other important cities of the state.

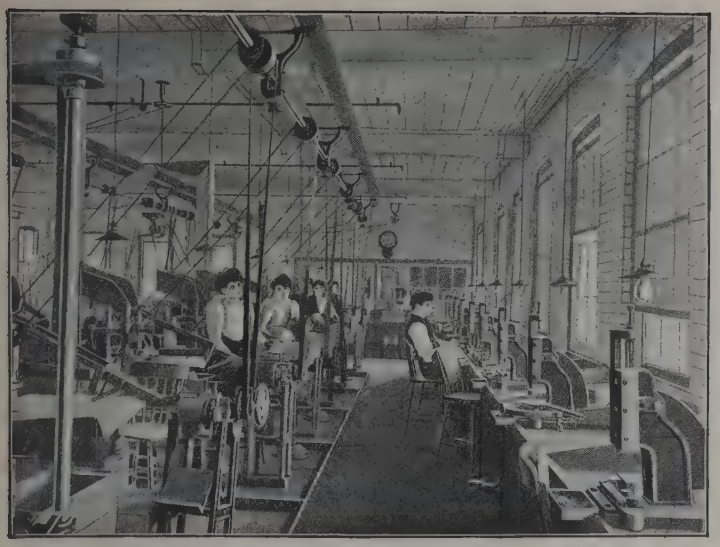
Tobacco raising in the Connecticut valley, and dairying and vegetable and seed farming in the western and southern parts of the state, are important industries. There are extensive oyster beds in Long Island Sound.

The state has valuable sandstone quarries and is especially noted for the variety of its manufactures. These include cotton and woolen goods, almost every kind of fine cutlery and hardware, tools and machinery, needles, pins, hooks and eyes, clocks, firearms, motor carriages, sewing machines, and all kinds of brass and plated ware.

New Haven, the seat of Yale University, one of the most famous in the country, is the largest city and chief port. *Hartford* is the headquarters of many insurance companies, and is noted for the manufacture of machinery, vehicles, and firearms. *Bridgeport* manufactures ammunition and machinery; *Waterbury*, brass ware and clocks; *New Britain*, hardware; and *Meriden*, plated ware.

SPINNING IN A COTTON MILL, FALL RIVER, MASS.

LOCK WORKS, NEW BRITAIN, CONN.



PIN FACTORY, CONNECTICUT.

JEWELRY SHOP, PROVIDENCE, R.I.

Rhode Island. Bound Rhode Island. Describe its drainage. Name a bay, a cape, and a river of this state; its capital; three other cities.

Rhode Island is the smallest and most densely peopled state in the country, and in proportion to its size has the most manufacturing,

Providence, the second city in New England, exceeds all other cities in this country in the manufacture of jewelry. It has many woolen mills, foundries and machine shops, and silverware factories. *Pawtucket* and *Woonsocket* are centers of both cotton and woolen manufacture. *Newport* is a famous summer resort.

Supplemental Work. Read chapters 9, 10, and 11, "Carpenter's Geographical Reader, North America." Describe, as fully as Boston is described, one other city or place in New England.

THE NORTHERN SECTION

Begin this lesson by studying the Map Questions on page 60.

Throughout the Northern Section the surface is comparatively smooth and flat, except in the Appalachian region in the east, the Ozark Mountains in the south, and the Black Hills in the extreme west. The soil nearly everywhere is deep and fertile, and composed largely of the rock waste deposited by the old Laurentian glacier, which in New England swept much of the soil off into the sea.

The climate is favorable for agriculture, the summers being warm and, except in the extreme west, the rainfall is ample. The people have seized upon these natural advantages and have made agriculture the most important industry of the section; and through the invention and use of improved agricultural implements they have made this one of the greatest food-producing regions of the world.

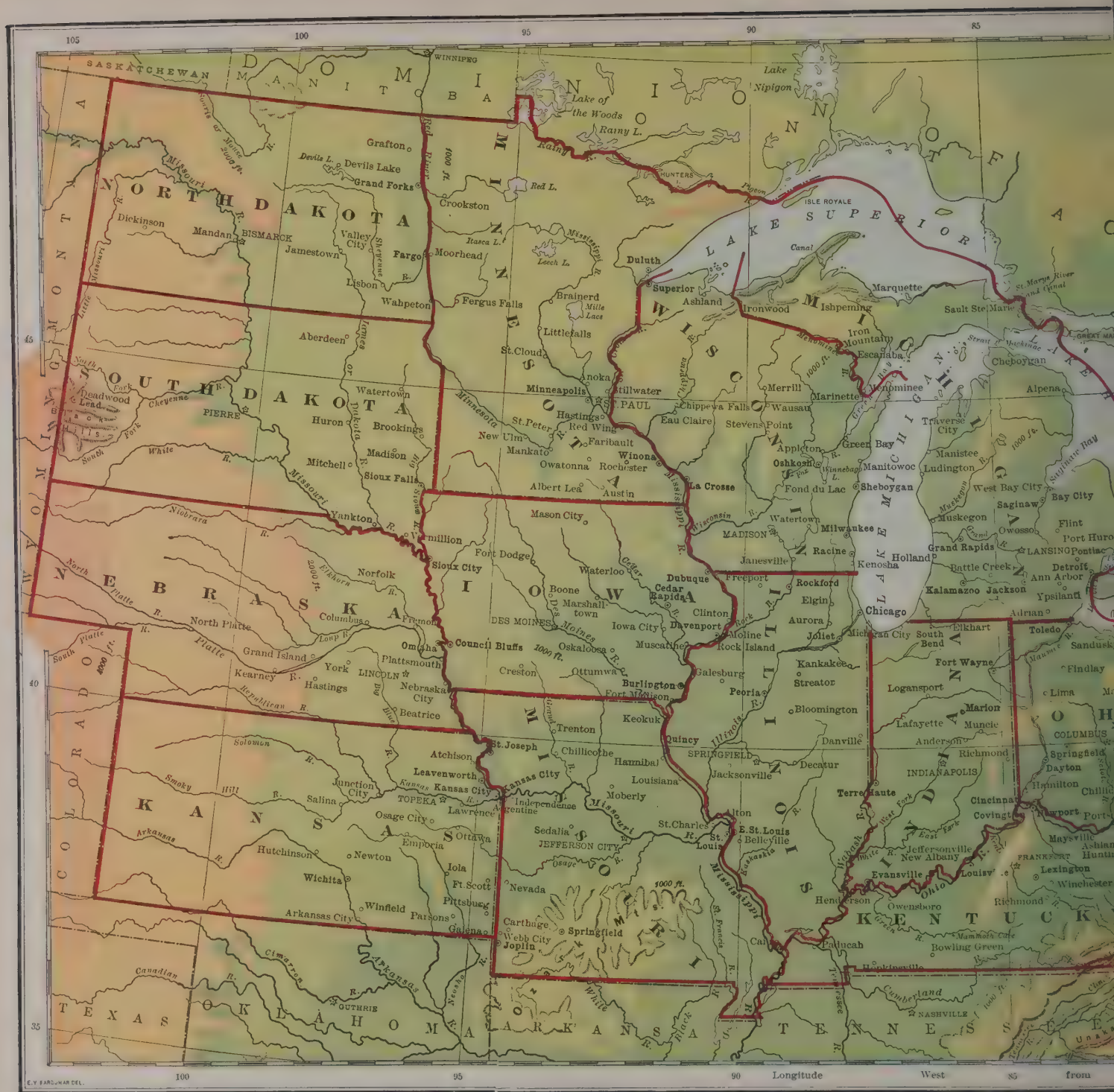
In the states of this section, especially in the region west of the Appalachian Mountains, the chief food crops are raised in enormous quantities, so that about five sixths of our country's yield of wheat, corn, oats, hay, and potatoes comes from the section (maps, p. 51). Other food crops of lesser importance are grown, as well as the bulk of the tobacco crop of the United States.

Because domestic animals are largely dependent upon the attention of man and the crops which he raises, most of the hogs, cattle, and butter and eggs produced in the country come from this section (p. 52). On the Atlantic coast of the section are the greatest oyster fisheries of the United States.

In the forest regions of this section (map, p. 52), lumbering is an important industry; the pine belt of the Great Lakes being one of the great timber-producing regions of the Union.

STORAGE YARD OF A BLAST FURNACE, PENNSYLVANIA.

The largest coal and iron mines of the country are in this section, and the section also supplies a large part of the product of petroleum and copper (pp. 52, 53). There are valuable lead and zinc mines west of the Ozark Mountains.

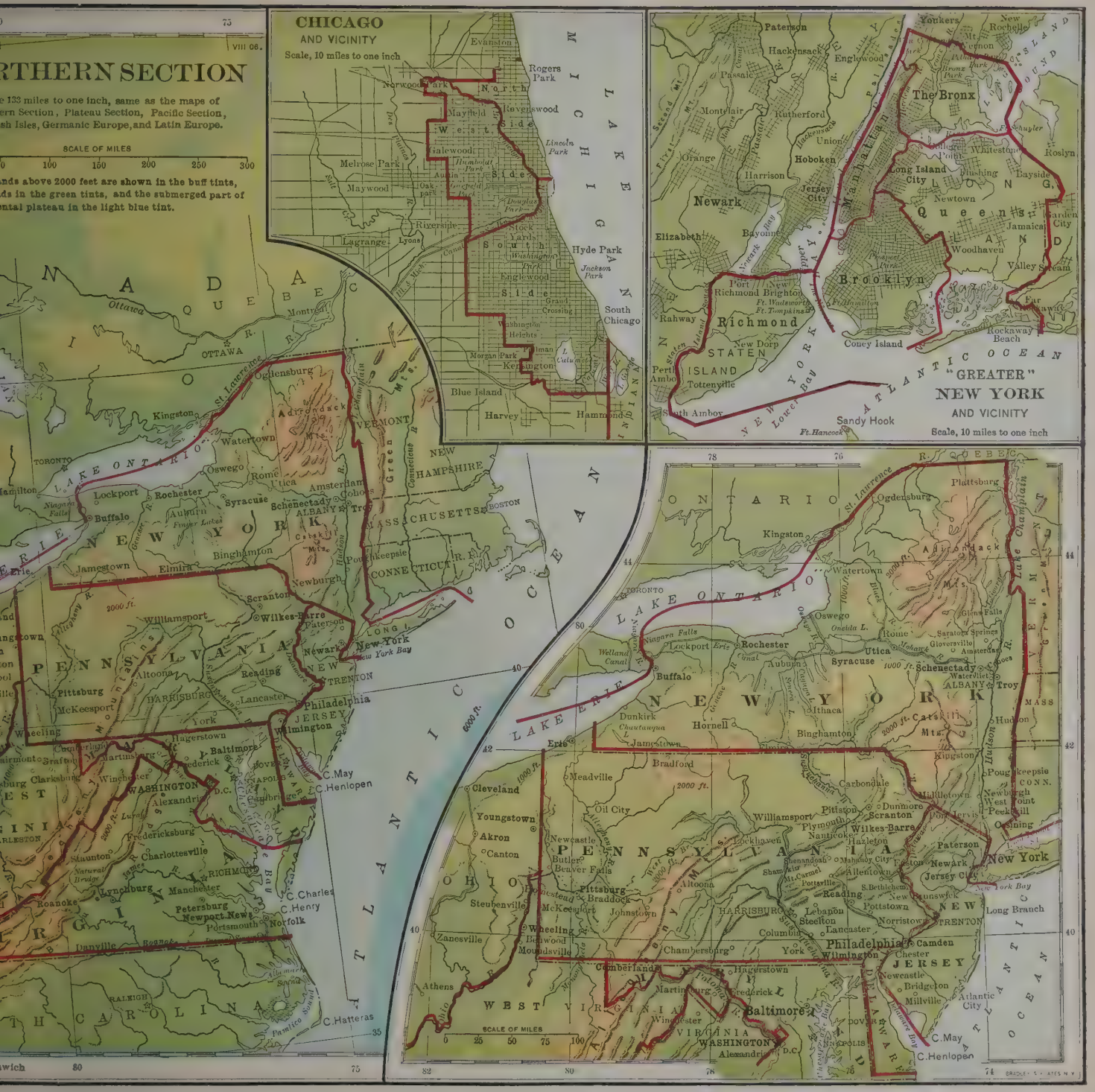


Map Questions. Which states of this section are crossed by the Appalachian Mountains or the Atlantic plain? Which states lie between the Appalachian Mountains and the Mississippi River? Which states lie mostly in the Lake plains? Which lie mostly in the Prairie plains? Which lie partly in the Great Plains?

It will be seen from the city map on p. 53 that the eastern and central parts of this section are included in the great manufacturing region of the United States. The manufactures are chiefly those which utilize the raw materials produced in the section — food products, lumber, and iron ore.

West of the Appalachian Mountains, flour milling and the packing and curing of meat are characteristic industries. Along the Great Lakes and on the Allegheny plateaus are sawmills, while the iron and steel industries are centered at points where coal and iron ore can be most cheaply brought together. The manufacture of tobacco is important in the southern part of the section. East of the mountains the manufactures are more varied and consume much raw material not produced in the section. The weaving of cotton, wool, and silk, and the refining of sugar, are extensive industries of this kind.

New York Bay, Delaware Bay, and Chesapeake Bay, which indent the east coast of this section, are all deep enough for the largest vessels, and contain the best har-



bors on our Atlantic coast south of New England. The chief rivers which flow into these bays — the Hudson, the Delaware, and the Susquehanna and Potomac — all rise west of the Appalachian ridges and cross them through water gaps (p. 44), but south of the Potomac River the Blue Ridge is an almost continuous wall between the coast and the Mississippi valley. The railroad map (p. 53) shows the effect of this peculiar Appalachian drainage on the railroad system of the country. The seaports on the three bays of this section are therefore among the largest cities of the country, and through them by far the greater part of our foreign commerce passes.

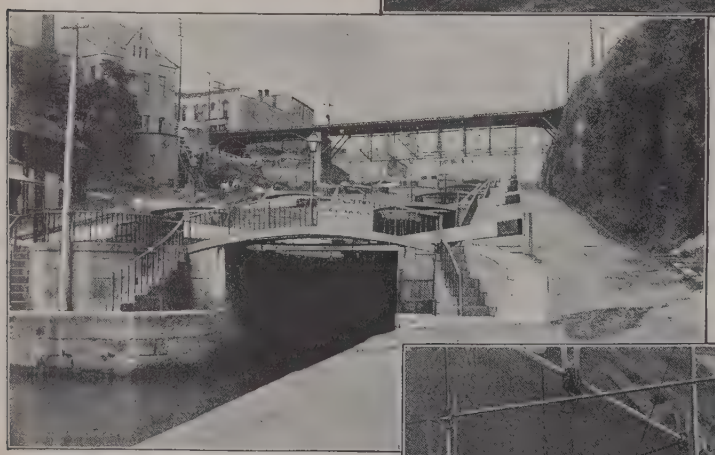
West of the Appalachian Mountains the smooth surface of this section is covered with a network of railroads, by which raw materials are collected and taken to manufacturing centers, and the manufactured products are afterward distributed.

The Great Lakes are connected by navigable straits or canals, and form a commercial route of great importance. Niagara River, in its course from Lake Erie to Lake Ontario, plunges over a cliff about 160 feet

high, forming Niagara Falls — one of the grandest cataracts (§ 55) in the world. As the falls interrupt the navigation of the river, the Welland Canal has been constructed between the lakes, through Canada.

Canals have also been constructed in Canada around the rapids of the St. Lawrence River to tide water at Montreal. The Erie Canal, from Lake Erie by way of the low Mohawk valley to the Hudson, forms a most important water route through our own country from the Great Lakes to tide water.

NIAGARA FALLS.



LOCKS ON THE ERIE CANAL.

The Mississippi, Ohio, and Missouri rivers and many of their tributaries are much used for transporting coal, lumber, and other bulky freight. Several canals have been constructed through the low divide to connect the Great Lakes with the Mississippi system.

CREAMERY, SOUTHERN NEW YORK.

The Northern section contains about two thirds of all the people in the United States, and nearly three fourths of all the foreign immigrants in the country.

The Northern Appalachian States. The seven states of this section which are crossed by the Appalachian region or by the Atlantic plain are sometimes called the "Middle States." A very large part of our coal and petroleum, and much iron ore, come from this region. Manufacturing and the production of food crops are more important in the northern part, while market gardening and the production of oysters and tobacco are of great importance in the southern.

New York. What states and country border New York? What three lakes form part of the boundary? What river system drains the northern part? Trace its divide across the state. To what great river system does the southwestern part drain? In what slope is the southeastern half of the state? Name and locate the mountains of New York; the islands; the lakes. By what river are the small lakes in the west-central part drained into Lake Ontario? What is the chief tributary of the Hudson? Name and locate the capital; the chief city; the chief lake port; a city on the Genesee River; four other large cities.

New York, though of only medium size, is the first state in the Union in population, commerce, and manufacturing, and is one of the first in agriculture. Its preëminence depends largely upon the existence in the state of the lowest route to the West through the Appalachian Mountains. This route, following the Hudson and Mohawk valleys, is occupied by railroads and the Erie Canal. As passengers and freight do not have to be lifted over the mountains, transportation is easy and cheap, and the route has become a great commercial thoroughfare, attracting population and developing industries in its neighborhood, and making New York city, with its fine harbor, the greatest seaport in America. Canals connect the Hudson with the St. Lawrence through Lake Champlain, and also with the Delaware and the coal fields of Pennsylvania.

Much water power is utilized in manufacturing, and fuel is obtained from the near-by Pennsylvania coal fields. Clothing, machinery, printed matter, textiles, refined sugar, beer, packed meat, and tobacco are the chief manufactures.

The state is noted for its dairy products, and for its large crops of potatoes, buckwheat, and hops. Much salt is also obtained, especially from wells in the Genesee valley.

New York is the largest and most important city in the United States, and is second only to London among the great cities of the world. It contains about four millions of people, and covers a land area of about 360 square miles.

Founded by the Dutch on the south end of Manhattan Island, at the mouth of the Hudson, the city has gradually spread over the island, and has also taken within its limits a part of the mainland to the north, Staten Island, and the west end of Long Island, including the great city of Brooklyn.

Traffic from the west and south reaches the city by ferry, and tunnels are now building under the Hudson River. The harbor is large enough to accommodate many hundreds of ships. More than half of the foreign trade of the country is carried on through this port.

So much money is controlled by the banks of New York that when great business enterprises are started anywhere in the country the capital required is generally obtained in New York.

Office Buildings, New York City.

New York is the chief manufacturing city of the country. Nearly everything needed by man is made here, but the making of clothing is by far the greatest industry.

Large quantities of raw sugar from the West Indies are refined, and petroleum, flowing from western Pennsylvania through pipe lines, is made into kerosene in the vicinity. More books, magazines, and newspapers are published in New York than in any other city of the United States. Columbia University, one of the largest universities in the country, is located in New York.

The southern half of Manhattan Island embraces the wholesale business region, and it is much crowded. Thousands of the business men live ten or more miles from their places of business — in the northern part of the city, on Long Island, on Staten Island, in New Jersey, and on the mainland to the north.

Buffalo is the western terminus of the Erie Canal, and a great railroad center. The reshipment of wheat, flour, and meat from the West is a very important industry. Much coal and salt are shipped westward. Packed meats, iron and steel machinery, and linseed oil are the chief manufactures. Electricity generated by the water power of Niagara Falls is used in Buffalo.

Rochester, at the falls of the Genesee, manufactures clothing, boots and shoes, and machinery, and has many nurseries in its vicinity. *Syracuse* manufactures clothing, machinery, and iron and steel, and has famous salt springs. *Albany*, the capital, is an important railroad center, and manufactures cars, beer, and machinery. *Troy* is the terminus of the Erie Canal and of the Champlain Canal. It is also at the head of tidewater in the Hudson. It has large manufactories of shirts, collars, and cuffs, and foundries and machine shops. *Utica* manufactures clothing and knit goods, and has large nurseries. It is the chief cheese market of central New York. *Yonkers* and *Schenectady* are also large manufacturing cities.

At *West Point* is the United States Military Academy. Cornell University, at *Ithaca*, is among our largest institutions of learning.

Pennsylvania. What states border Pennsylvania? Describe its surface. Trace across the state the principal divide. What two large rivers are on the eastern slope; on the western? Into what does each flow? Locate the capital; the chief city; three other important cities of the eastern slope; two of the western.

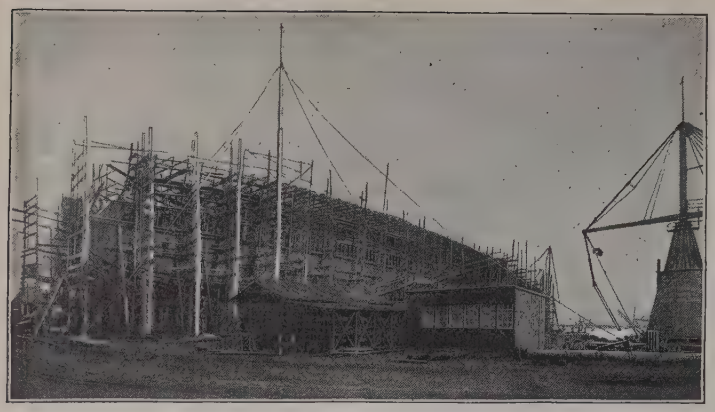
Pennsylvania is the great coal-producing state, and stands second in population and the value of manufactures. Bituminous coal is found in the Allegheny plateaus, and anthracite coal in the rock folds of the ridges in the northeastern part of the state. Much petroleum is obtained in the Allegheny and Monongahela valleys. Other mineral products are cement and slate.

The characteristic manufactures of the western part of the state are iron and steel (from Lake Superior ore), and coke made from coal. In these industries Pennsylvania exceeds all the other states combined. In the eastern part of the state, the weaving of wool, cotton, and silk is an important industry; and machinery, cars, flour, and refined sugar and petroleum products are manufactured extensively.

Coal Mine, Pennsylvania.

From the forest-covered mountains lumber is floated down the rivers to the sawmills and planing mills, and with the oak and hemlock bark much leather is tanned in the northwestern part of the state.

Entrance to Harbor, Buffalo, N.Y.



SHIPBUILDING, PHILADELPHIA, PA.

The soil of the valleys and of the eastern lowland is fertile, and Pennsylvania has a high rank as an agricultural state. Dairying is an important industry.

Several great railroads from the seaboard to the Mississippi valley cross the mountains in this state amidst beautiful scenery. Railroads also connect the bituminous coal regions with Lake Erie, and the anthracite coal regions have rail and canal connection with New York, Delaware, and Chesapeake bays.

Philadelphia is the third city in the Union in population. It was founded by English Quakers, and for a long time was called "the Quaker City." It was laid out between the Delaware and Schuylkill rivers near their junction, but it has now spread far west of the Schuylkill and along the Delaware for many miles.

The nearness of the anthracite coal region makes fuel plentiful and cheap, and Philadelphia has become one of the greatest manufacturing cities of the country. Among its manufactures are woolen goods, carpets, and clothing. Sugar refining, tanning, and the making of heavy machinery, locomotives, and steamships, are also important industries.

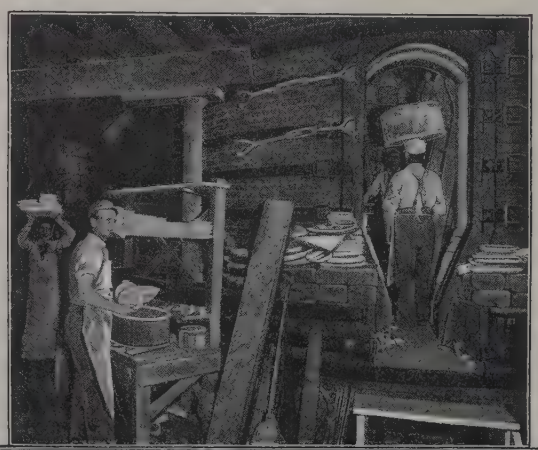
Ocean steamers ascend to the wharves of Philadelphia, and much coal is exported.

Congress was in session in Philadelphia when it declared the independence of this country in 1776. After the Revolutionary War Philadelphia was the capital of the country for several years. Independence Hall, in which the Declaration of Independence was made and the Constitution framed, is much visited. In Philadelphia is located the great University of Pennsylvania.

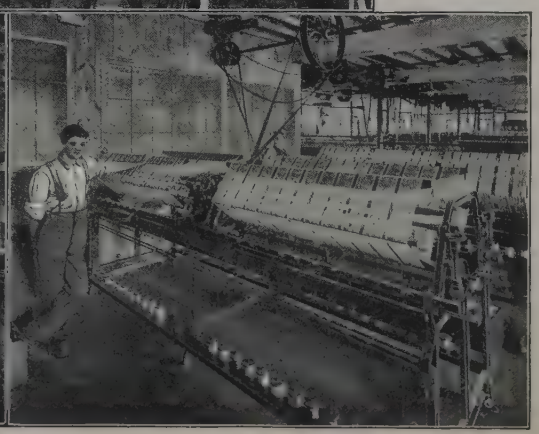
Pittsburg, which now includes the city of Allegheny, forms the great center of population in western Pennsylvania. It is in the heart of the bituminous coal, petroleum, and natural gas region. The city possesses the great commercial advantage of the water routes afforded by the Ohio and the two rivers which here unite to form it, and millions of bushels of coal are shipped from Pittsburg down the Ohio. A large part of the coke of the country, and much of the structural and railway iron and steel, are made here; Pittsburg is also the greatest center in the world for the manufacture of plate glass. Pickles, packed meat, and leather are also manufactured.

Scranton is a mining center of the anthracite coal region. It is also a railroad center, with large iron and steel works, silk mills, and machine shops. *Reading* is in a rich agricultural region, and receives by canal cheap fuel from the anthracite regions to supply its iron and steel works and foundries. *Erie* has a fine harbor and a large trade in iron ore, lumber, and coal. It has important steel works, foundries, and flour mills. *Wilkes-Barre*, in the anthracite coal region, manufactures iron and steel machinery, silk, and lumber. *Harrisburg*, the capital, is located in a fertile region, and manufactures iron, steel, and railroad cars.

POTTERY, TRENTON, N.J.



CARPET WEAVING, PHILADELPHIA, PA.



SILK FACTORY, PATERSON, N.J.

New Jersey. Bound New Jersey. Describe the coast. Locate two large bays; the mountains; the capital; three large cities in the northern part; one in the western part.

New Jersey is one of the small states of the Union. The northeastern part, however, is a great commercial and manufacturing region. The state ranks first in the manufacture of silk. The making of machinery, malt liquors, and leather, and the refining of petroleum, are important industries. Vegetables and fruit are raised in large quantities. The coast

region is sandy, and the beaches are great summer resorts. The state is crossed by two canals and many railroads.

Newark manufactures leather, jewelry, malt liquors, and machinery. *Jersey City* is commercially a part of New York city. It has many manufactories. Here and in the adjoining cities of *Hoboken* and *Bayonne* are the terminal freight and coal yards of many railroads, and extensive wharves of many ocean and coastwise steamer lines. In *Paterson* more silk is manufactured than in any other American city. *Trenton* manufactures steel goods and pottery. *Camden*, really a suburb of Philadelphia, manufactures leather, steamships, woolen goods, and machinery. *Elizabeth* manufactures machinery.

Delaware. By what waters and states is Delaware bounded? Compare it in size with New Jersey. Locate the capital; the chief city.

Delaware lies wholly in the coast plain. The northern part is a manufacturing region; the southern part a

POWDER WORKS, WILMINGTON, DEL.

grain, vegetable, and fruit region, the Delaware peaches being particularly excellent and abundant. The canning of fruits and vegetables is an important industry.

Wilmington contains a large part of the population of Delaware, and within its limits are most of the important manufactories of the state. Here are tanneries, car works, shipyards, machine shops, foundries, and powder works.

Maryland. What river forms most of the southern boundary of Maryland? By what states is Maryland bounded? What other states own parts of the peninsula including eastern Maryland? Which part of the state is in the mountain region? Locate the capital; the chief city; one other city.

Chesapeake Bay has many good harbors, and the chief oyster beds of the country. Grain, fruit, vegetables, and tobacco are important products. In the mountains of the western part are valuable coal mines.

CONGRESSIONAL LIBRARY, WASHINGTON.

Baltimore is one of the cities on the Fall line (p. 43). Its fine harbor, to which the valley of the Potomac River is an accessible route, is nearer the grain region of the interior than of any other large Atlantic seaport. For these reasons Baltimore is a great food-shipping port. The making of clothing, the canning of fruit, vegetables, and oysters from the surrounding region, and the manufacture of tobacco, are the principal industries. Baltimore is the seat of the famous Johns Hopkins University.

Cumberland has a canal to tide water in the Potomac, and is the shipping point for the Maryland coal regions. It has important iron and steel works and foundries.

At *Annapolis* is the United States Naval Academy.

The District of Columbia. The District of Columbia was given to the United States by Maryland as a site for the national capital.

Washington, the most beautiful city in the United States, is situated where the Potomac River crosses the Fall line. Unlike most cities, it was planned as a large capital city before it was built. It has broad, straight streets and avenues, and many parks. These are shaded with fine trees and decorated with statues and monuments.

Though Washington is built where water power can be obtained, and where navigation from the sea is possible, the city has little commerce or manufacturing other than government printing. It has grown up simply as the national capital.

The President of the United States lives in Washington, as well as the members of the Cabinet and the foreign ministers who come to our country from all the nations of the earth to represent their governments and to look after the interests of their people. The senators and representatives meet in the Capitol (p. 48), and Congress is in session for several months of each year.

WHARVES, BALTIMORE, MD.

TOBACCO MARKET, DANVILLE, VA.

Virginia. What states border Virginia? Trace through the state the divide of the Mississippi basin. Name three rivers of the Atlantic slope; two of the Mississippi slope. Locate two capes; the mountain ranges; the capital; the chief seaports; two other important cities in the basin of the James; two in the Roanoke basin.

Virginia ranks among the foremost states in the Union in the production of tobacco, and its peanut crop is the largest in the country. The Great Valley west of Blue Ridge is a fertile wheat region. In it are the caverns (§ 42, p. 13) of Luray, and the Natural Bridge. About half the people of the state are engaged in agriculture.

There are valuable coal and iron mines. By means of the valleys and water gaps of the Kanawha, Roanoke, James, and Potomac rivers, several railway lines cross the mountains and convey coal and other products to the harbors of Chesapeake Bay.

Richmond, the industrial center and capital, is famous as the capital of the Confederacy during the Civil War. It has a large trade and extensive manufactories of tobacco, machinery, and iron goods. *Norfolk* (with *Portsmouth* opposite) has a fine harbor and is an important shipping point, especially for coal and cotton. A United States Navy Yard is located near here. *Petersburg*, on the Fall line, has cotton and silk mills and tobacco factories. *Roanoke* has large iron and machine works. *Newport News* is an important railroad terminus and seaport. Steel vessels are built in its shipyards. *Lynchburg* and *Danville* are tobacco markets.

West Virginia. Bound West Virginia. Trace the main divide across the state. What river basin embraces most of the state? Locate the capital; three cities on the Ohio.

West Virginia is one of the foremost states in the production of petroleum, coal, and natural gas. Much salt also is produced. There are extensive forests and fine grazing lands on the plateaus; farming is pursued chiefly in the fertile lower lands farther west.

Wheeling, in a coal and gas region, manufactures steel and glass. *Huntington* ships coal and lumber. *Parkersburg* is in the oil region; and *Charleston*, in the lumber region.

Supplemental Work. Read chapters 5–8, 12, 26–29, "Carpenter's Geographical Reader, North America." Describe, as fully as New York is described, one other city in this section.

COAL MINE, WEST VIRGINIA.

The Ohio Valley and Upper Lake States. The six states of this section that lie between the Appalachian Mountains and the Mississippi River are sometimes called the "East Central States." Name these states. Through them trace the divide between the St. Lawrence and Mississippi basins. Which states are in both basins? Which are in only one basin? A larger or smaller part of each of these states lies in the Prairie plains, and all are heavy producers of grain and meat. Extensive forests and rich deposits of coal add to the resources of this group.

HARBOR OF CLEVELAND, OHIO.

Ohio. Give the natural boundaries of Ohio. What states border it? Name one tributary of Lake Erie; two of the Ohio. Trace through the state the main divide. Locate the capital; two lake ports; five other important cities.

Ohio holds a high rank both in manufacturing and in agriculture, and it is one of the chief wool-growing states in the Union. It stands high also in the production of petroleum and natural gas. The abundance of iron ore and coal in the eastern part of the state, and the ease with which ore can be obtained from the Lake Superior regions by way of the Great Lakes, give to Ohio great advantages for manufacturing. Iron and steel, machin-

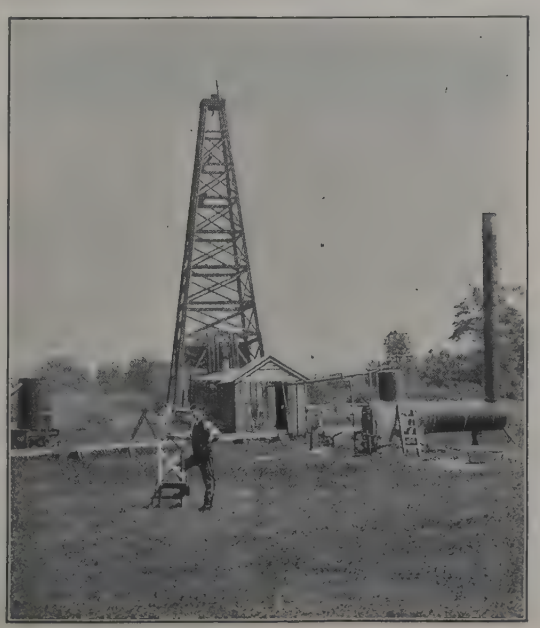
ery, flour, lumber, liquors, and tobacco are important manufactures. Fruit farming, dairying, and tobacco raising are carried on extensively.

River Landing, Cincinnati, Ohio.

Cleveland, the largest city of Ohio, is situated on Lake Erie at the mouth of Cuyahoga River. From this point a canal extends south to the Ohio River by way of the Scioto valley. Several railroads leading to the Mohawk valley from the agricultural regions to the west and southwest, converge at Cleveland and help to make it a great commercial center. The nearness of coal, petroleum, and natural gas fields to the southeast, and the low rate at which grain, lumber, and iron ore can be received by way of the Great Lakes, have made Cleveland a great manufacturing center. Iron and steel manufacturing, meat packing, petroleum refining, and shipbuilding are among the chief industries.

Cincinnati is situated on the broad flood plain of the Ohio, between the Great and Little Miami rivers, and opposite the mouth of the Licking — the valleys of these streams affording gradual descent to the Ohio River at this point. Through one of these valleys a canal extends to Lake Erie. Before railroads existed, the Ohio was the chief trade route of this whole region, and Cincinnati soon became the greatest commercial center of the Ohio basin. Cheap coal is obtained by river from Pittsburg, and Cincinnati has become a great manufacturing center. The chief manufactures are clothing, distilled and malt liquors, and machinery. The part of the city in the flood plain is devoted largely to business, while the residential part on the surrounding hill tops is reached by several inclined-plane railroads up the steep face of the bluffs.

Toledo, a great railroad center, with a fine harbor and a canal to Cincinnati, is an important commercial and manufacturing city. *Columbus*, the capital, on the canal from Cleveland to the Ohio, is an important trade center, and manufactures iron and steel, and machinery. *Dayton*, on the canal from Toledo to Cincinnati, manufactures much machinery. *Youngstown* has large iron and steel works. *Akron* is noted for the manufacture of rubber goods, and *Springfield* for farming machinery.



Petroleum Well, Indiana.

Indiana. What states border Indiana? What rivers are on the boundary? What tributary of the Ohio drains most of the state? Locate the capital; two cities in the northern part of the state; two in the southern part.

Indiana stands very high both as an agricultural and as a manufacturing state. In the state is found an abundance of coal (map, p. 52), natural gas, and petroleum. In order to pass south of Lake Michigan, most of the great east and west railroads of the country cross this state; and the Ohio and Wabash rivers are natural routes of commerce.

Indianapolis, an important railroad center, has an immense domestic trade. A belt railroad encircles the city and connects all the centering lines with the packing houses, grain elevators, flour mills, stock yards, and machine shops.

Evansville, the chief shipping port of southern Indiana, has flour and lumber mills. *Fort Wayne* has extensive car and machine shops. *Terre Haute*, at the head of navigation on the Wabash, has large distilleries. *South Bend* manufactures carriages and wagons, and farming machinery.

Illinois. What states border Illinois? Name the boundary waters. Compare the extent of lake coast with that of Indiana. Trace the Mississippi-St. Lawrence divide through the state. Name three tributaries of the Mississippi. Name the capital; the great lake port; two cities on the Mississippi River; three other cities. How can a cargo of grain go from Chicago to the Atlantic ports?

Illinois is in the heart of the corn, wheat, and stock-raising region, and is one of the greatest food-producing states of the Union. The middle coal field underlies almost the entire state, and, by supplying cheap fuel, enables Illinois to take high rank as a manufacturing state.

The railroad system is extensive, and the state is traversed by a navigable water route connecting the Mississippi River with Lake Michigan by way of the Illinois River.

Chicago is the largest city on the continent, except New York, and it is the greatest market in the world for meat and grain. It is at

the mouth of Chicago River, which forms the harbor. The first houses there were built about a hundred years ago, and the city has grown very rapidily. It now extends twenty-five miles along the lake front and several miles back over the prairies. It contains about two million people.

Chicago is in the center of the greatest grain and stock-raising region of the world, and the forests of the north are easy of access. There is an ample supply of coal in the region just south of the city, and from the shores of Lake Superior is received the best of iron ore. Freight may be carried on the Great Lakes and canals to the Atlantic seaports of New York and Montreal, or by railroads which enter the city; for Chicago is the greatest railroad center in the world. As a result, Chicago is not only a great commercial city but a great manufacturing center. Thousands of cattle and hogs are killed every day in the stock yards, and vast quantities of beef, pork, and other manufactured animal products are sent to all parts of the country. Tanneries take the hides and convert them into leather, and mills change the timber of the North into planed lumber, furniture, railroad cars, and agricultural implements. Steel rails and beams, machinery, clothing, books, and electrical goods are manufactured extensively.

Meat Packing, Chicago.

Stock Yards, Chicago.

The University of Chicago, though one of the youngest universities, is one of the largest in the United States.

Peoria, on the Illinois River, has great distilleries, stock yards, meat-packing establishments, and machine shops. *Quincy* is a large trade center, and has flour mills, breweries, and foundries. *Springfield*, the capital, is an important coal-mining center. *Rockford* manufactures furniture, knit goods, and machinery. *East St. Louis* is a railroad and manufacturing center. *Joliet* has great iron and steel works and quarries.

Kentucky. Bound Kentucky. What three rivers form much of its boundary? Name the principal rivers. Locate the capital; four important cities.

Kentucky produces about one third of the tobacco raised in the whole country, but corn is the most valuable crop. Hemp and sorghum are also characteristic crops. Much live stock is raised, especially fine horses. Kentucky has iron and coal mines and fine hardwood forests. Mammoth Cave, in the central part of the state, is one of the largest caverns known.

Louisville, at the "falls," or rapids, of the Ohio, is a great tobacco market. A canal for steamers extends around the rapids. Great quantities of tobacco, cottonseed oil, and liquors are manufactured.

Stock Farm, Kentucky.

Covington and *Newport*, opposite Cincinnati, are part of that center, industrially. *Lexington*, in the Blue Grass region, is noted for race horses and fine stock.

Michigan. By which of the Great Lakes is Michigan bordered? Locate the Strait of Mackinac; the St. Marys River and Canal; Lake St. Clair; the capital; two cities north of the capital; two west; two south and east.

In northern and central Michigan lumbering and mining are the important industries. The pine forests of Michigan have furnished to the whole section much of its building lumber, and from this state are also obtained about one third of the iron ore, copper, and salt produced in the country, and some coal. A greater amount

"Soo" Canal, Michigan.

of freight passes through the St. Marys, or "Soo," Canal than through any other canal in the world.

The chief occupation of southern Michigan is agriculture, the state taking a high rank in the yield of dairy products, potatoes, sugar beets, fruits, and wool.

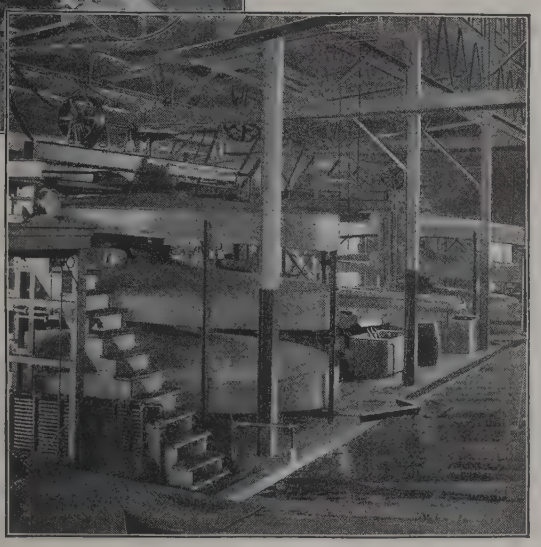
Detroit is one of the oldest cities in the Central Lowland, having been founded by the French from the lower St. Lawrence valley more than two hundred years ago. It has extensive transportation facilities by both water and rail, and has become a great commercial and manufacturing center. The chief manufactures are cars, machinery, tobacco, drugs, and iron and steel.

Grand Rapids has the best water power in the state, and is especially noted for the manufacture of furniture. *Saginaw* is the center of the beet sugar and coal-mining industries, and with *Bay City* is engaged in the lumber trade and the manufacture of salt. *Kalamazoo* is the center of a great celery-producing region, and *Jackson* is a railroad center.

Ann Arbor is the seat of the famous University of Michigan.

Wisconsin. What states border Wisconsin? What rivers and lakes form part of its boundary? Name three tributaries of the Mississippi River; one of Lake Michigan. Locate the capital; three cities on Lake Michigan; three other cities.

Northern Wisconsin is covered with valuable pine forests, and contains rich deposits of iron ore. In the southern part of the state dairying is a large industry, and grain, potatoes, and tobacco are important crops. An important water route between Lake Michigan and the Mississippi, by way of the Fox and Wisconsin valleys, crosses the state.



Copper Mill, Michigan.

Milwaukee, like Detroit, occupies the site of an old Indian town, whither white men came early to trade for furs. It is an important shipping port for grain and lumber, and has extensive machine shops, breweries, tanneries, iron and steel works, and flour mills.

Superior ships wheat, iron ore, and lumber, and receives great quantities of coal. It has important flour and lumber mills, shipyards, and iron foundries. *Racine* has a large commerce on the lake, and manufactures agricultural machines. *Oshkosh* and *La Crosse* are centers of the lumber trade, and La Crosse has a large flour-milling industry. *Madison*, the capital, is the seat of the large state university. *Sheboygan* has furniture factories.

Supplemental Work. Read chapters 20, 22–25, 30, "Carpenter's Geographical Reader, North America." Describe, as fully as Chicago is described, one other city in the section.

States of the Missouri Basin. The seven states of the Northern Section west of the Mississippi River are sometimes called the "West Central States." Name them (map, p. 60). Which of them lie partly or wholly in the Missouri basin? Through these states trace the divide between the Gulf slope and the St. Lawrence and Hudson Bay slopes. Which state is in all three of these slopes?

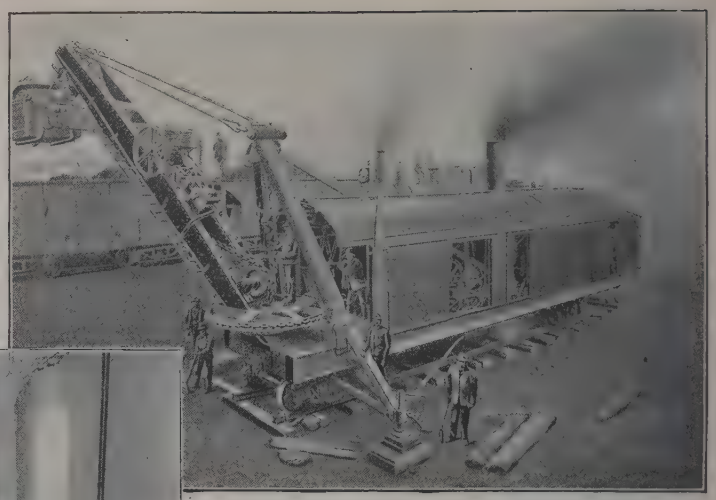
The high western portion of this group affords excellent pasturage for cattle, but it is subject to droughts which render farming uncertain except by the aid of irrigation. The lower eastern portion, however, has ample rainfall and great fertility, and yields about half of the grain and meat product of the country. This group of states produces nearly all the flaxseed (from which linseed oil is made) raised in the United States.

Minnesota. Give the boundaries of Minnesota. What three great river systems have their headwaters in this state? Which system drains the greater part of the state? Locate the capital; three other cities.

Shipping Iron Ore, Superior, Wis.

Minnesota is one of the foremost wheat-producing states. Wheat is raised in all parts of the state, but especially in the flat valley of the Red River. During the glacial period most of this valley was a vast lake, upon the bottom of which was deposited the sediment that forms the fertile soil and level surface of the present wheat fields.

In the Mesaba and Vermilion ranges in the northeastern part of the state are found some of the richest and most extensive iron mines in the world.



Loading Iron Ore, Minnesota.

More than half of the state is forest-clad, — with pine in the north and with oak and other hard woods in the southeast, — and lumbering is an active industry.

Flour Mill, Minneapolis, Minn.

Minneapolis, at the Falls of St. Anthony, and *St. Paul*, at the head of navigation on the Mississippi River, though separate cities, really form a single center of population and one of the ten greatest manufacturing and commercial centers in the country. Minneapolis is the greatest flour-milling city in the world, and lumber milling is also very important, the water power of the falls being largely utilized in both industries.

Duluth, with the city of Superior opposite, forms another center of population. It has large lumber mills, and a fine harbor with great docks and elevators. It is at the eastern end of a railroad to the Pacific, and at the head of navigation on the Great Lakes, and ships wheat, flour, lumber, iron ore, and copper. *Winona* has a large trade in lumber and wheat.

Iowa. Bound Iowa. What rivers form part of its boundary? Which three states of the Northeastern Section are within the parallels that bound Iowa? How does Iowa compare in area with these three states? Locate its capital; four cities in the east; two in the west.

Iowa is one of the greatest agricultural and stock-producing states in the Union. All kinds of farm produce are raised in great quantities, particularly corn, oats, hay, poultry, eggs, and dairy products. Much bituminous coal is mined.

Thrashing Wheat, Iowa.

Des Moines, the capital, is an important railroad and trade center in a mining and rich grazing region. Medicines, flour, and machinery are manufactured.

Dubuque has lumber mills, breweries, and carriage factories. *Sioux City* has large meat-packing establishments. *Davenport*, with Rock Island and Moline opposite, forms an important center of trade. It is a great grain market, and manufactures machinery and packed meat. *Cedar Rapids* is a busy trade center. *Burlington* and *Council Bluffs* are important river ports.

Missouri. What states border Missouri? What rivers form part of the boundary? What mountains are in the state? Locate its capital; its five chief cities.

The raising of grain, sorghum, cattle, and hogs is the chief occupation on the rolling prairies of the northern half of the state. In the forest-covered plateau of the Ozark Mountains the production of fruit and wool, and lumbering, are important industries. Much coal is mined in northern, central, and western Missouri, and much zinc and lead in the southwest corner of the state.

St. Louis is the largest city in the Mississippi basin, and is exceeded in population by but three cities in the Union. Situated on the Mississippi River between the mouths of the Missouri and Ohio, it has admirable facilities for river transportation to all parts of the Mississippi basin. With the building of railroads and the development of the Mississippi valley, it has become a great railway and manufacturing center. It is one of the chief commercial cities of the country, and the principal collecting and distributing point for much of the southwestern quarter of the United States.

Kansas City is an important receiving and distributing point for a large region to the west. It is continuous with Kansas City, Kansas. *St. Joseph* is

CORN FIELD, KANSAS.

noted for meat packing and flour milling. *Joplin* is a mining center. *Springfield* has important flour mills and a large local trade.

Kansas. What states border Kansas? What can you say of the altitude of the state? Name its two chief rivers; its capital; three other cities.

The surface of Kansas is a long, gradual slope, the western boundary being about half a mile higher than the eastern. The rainfall in the east is sufficient for very successful farming. The west is drier, but affords excellent pasturage for cattle (§ 130). Kansas ranks among the leading states in the production of corn, wheat, cattle, horses, and hogs. There are important coal, zinc, and lead mines and petroleum wells in the eastern part of the state, and salt mines in the central part.

Kansas City is continuous with Kansas City, Missouri. In slaughtering and meat packing, its leading industry, the city ranks next to Chicago. *Topeka*, the capital, has large flour mills. *Wichita* is in a wheat-growing and stock-raising region. *Leavenworth* is in a coal-mining region of northeastern Kansas.

Nebraska. What states border Nebraska? How does Nebraska resemble Kansas in surface? in drainage? What river forms its eastern boundary? What tributary of the Missouri drains most of the state? Locate the capital; one other large city.

Nebraska, like Kansas, lies on the long, gradual slope west of the Missouri River, down which the wide, shallow tributaries of that stream flow in broad valleys. In the west, cattle herding is the chief industry; in the east, farming. Explain this difference.

Omaha and *South Omaha* in Nebraska, with Council Bluffs in Iowa, form a single center of population, commerce, and manufacturing. There are very large meat-packing establishments, extensive breweries, and smelting and refining works.

Lincoln, the capital, is a trade center, with a large distributing business in coal, grain, and live stock.

South Dakota. What states border South Dakota? In what part of the state is the greatest elevation of land? What river drains nearly the whole state? Locate the capital and chief cities.

South Dakota has a more uneven surface than either Kansas or Nebraska. In the east are hills of glacial drift, and near the western boundary there is a cluster of mountains called the Black Hills. Here gold and silver are mined and a low grade of tin ore is found. In the eastern part of the state wheat and flaxseed are important crops.

Sioux Falls has fine water power, and is the railroad center of the state. *Lead* is a mining center in the Black Hills region.

BEET SUGAR FACTORY, NEBRASKA.

North Dakota. What states and country bound North Dakota? What river boundary has it? What three states does it resemble in surface? In what two drainage slopes does North Dakota lie? Trace the divide between them. Locate the capital and chief cities.

Much of North Dakota east of the Missouri is covered with glacial drift. Here also is part of the fine Red River wheat region (p. 70). Some of the wheat farms are thousands of acres in extent. Much flaxseed is raised, and stock raising is an important industry.

Fargo, at the head of navigation on the Red River, is the center of several railroad lines. *Grand Forks* is in the rich wheat region.

Supplemental Work. Read chapter 21 of McMaster's "School History of the United States," and tell some anecdote connected with the history of this section. Read chapter 21, "Carpenter's Geographical Reader, North America." Describe, as fully as St. Louis is described, one other city in the section.

FARM, NORTH DAKOTA.

SOUTHERN SECTION
Scale 133 miles to one inch, same as the maps of Northern Section, Plateau Section, Pacific Section, British Isles, Central Europe, and Southwestern Europe
SCALE OF MILES
0 50 100 150 200 250 300
The highlands above 2000 feet are shown in the buff tints, the lowlands in the green tints, and the submerged part of the continental plateau in the light blue tint.
LAKE PONTCHARTRAIN
NEW ORLEANS
AND VICINITY
Scale, 10 miles to one inch
Longitude West from
COLORADO
KANSAS
NEW MEXICO
OKLAHOMA
TEXAS
ARKANSAS
LOUISIANA
MISSISSIPPI
TENNESSEE
GULF OF MEXICO
Galveston Bay
Matagorda Bay
Delta of the Mississippi River

THE SOUTHERN SECTION

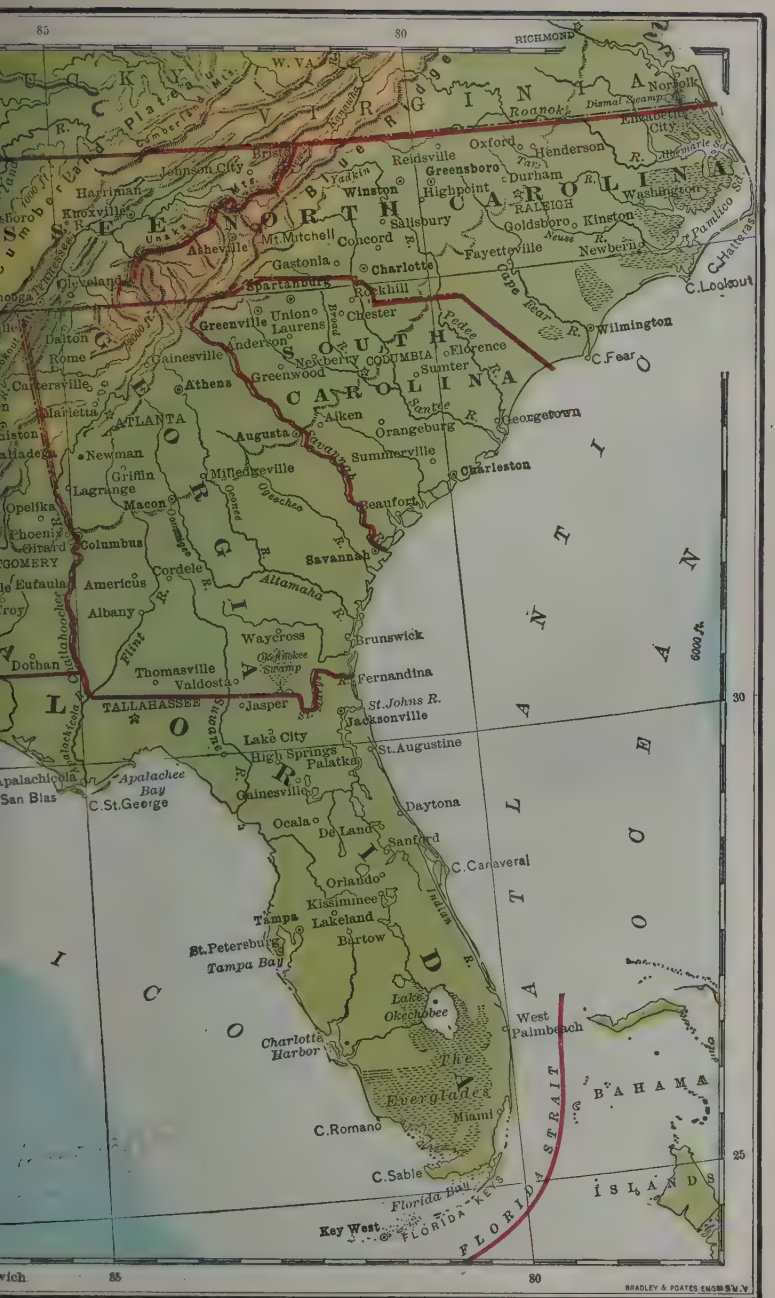
Which part of this section is highland? Which part is lowland? Which states contain part of the Appalachian Mountains? Which states lie partly or wholly in the Atlantic plain? Which lie partly or wholly in the Gulf plain? Which are broken by the Ozark Mountains? Which lie partly in the Great Plains? Which quarter of the United States embraces most of the Southern Section?

Near the coast the surface of this section is rather flat; then occur the low Piedmont hills in the east, and gently rolling plains in the west. The surface is rugged only near the Appalachian and Ozark ridges and near the mountains in the extreme west. The soil, though sandy toward the coast, is generally very fertile.

Long, hot summers and short, temperate winters prevail over nearly the whole of the section (map, p. 47). Although snow sometimes falls in every state, it soon melts. Over nearly the whole section the rainfall is abundant for purposes of farming. It is only in the extreme west that serious droughts occur.

Agriculture is the great industry, and cotton is by far the most important crop (map, p. 51), one fourth of the farm land being devoted to its cultivation. This section is the world's greatest cotton-producing region.

Most of the ordinary or "upland" cotton is grown in a broad belt lying about one hundred miles from the coast, and stretching from Texas to North Carolina, with extensions up the valleys of the larger rivers. The finest cotton, however, — that with the longest and toughest fiber, — comes from the sea islands along the Atlantic coast.



Corn is grown in nearly all parts of the section except in the extreme west, and, with sweet potatoes, it is the chief food crop. In the northern part much tobacco and some wheat are raised; in the southern part, sugar cane, rice, and oranges. The peach crop of the section is very large. Hogs are raised in most parts of the section, fine horses in the north, and many cattle in the west.

In the northern part of the section, especially in the valleys of the Appalachian and Ozark Mountains, are extensive forests of oak, hickory, ash, poplar, and cottonwood (map, p. 52). The forests of the coast plain are composed chiefly of yellow or southern pine. These forests yield valuable building lumber, and from the abundant sap of the pine trees are made great quantities of naval stores — pitch, rosin, and turpentine.

Coal is extensively mined in the Appalachian and Ozark regions of this section (map, p. 52), and the southern end of the Appalachians has become a great iron-mining district.

From the city map on p. 53, how do you think this section compares with the northeastern quarter of the country as a manufacturing region?

Formerly nearly all the labor in the Southern Section was done by negro slaves, who could do farm work, but had not been trained to manage machinery; so very little manufacturing was then done in the South, nearly all the manufactured goods used there being brought from abroad or from the North in exchange for raw cotton. Since the negroes were freed, however, many white people have turned their attention to manufacturing and mining, which have now become important industries in the South.

The manufacture of cotton cloth is rapidly increasing, especially in the eastern part of the section; and the extraction of oil from cotton seed has become an important industry in the central and west central parts. Sugar is made in the Mississippi delta; iron and steel are manufactured in the iron-mining region; and there are many sawmills in the forest regions, and turpentine distilleries in the great pineries of the Southeast.

The coast of nearly the whole section is fringed with barrier beaches (§ 66, p. 17), and many of the inlets are narrow and obstructed by shifting bars. In consequence foreign commerce has not been greatly developed, though much cotton and some grain, coal, and lumber are exported, and there is an active coasting trade in small vessels.

The railroad map (p. 53) shows that the railroads of the section are separated by the Appalachian Mountains into two groups. These two groups are connected by several lines which cross the Appalachians or pass around their southern end. Each group, however, indicates the chief routes taken by trade in its region: the Atlantic plain trading mostly with the northeastern part of the country, but the Southwest and lower Mississippi valley mostly with the great central prairie region.

From the population map (p. 49), tell how the density of population in this section compares with that in the northeastern quarter of the country. The Southern Section contains about one fourth of the people in the United States. There are not many foreigners; but about one third of the people are negroes, and in several of the states the negroes are more numerous than the whites.

North Carolina. What states border North Carolina? To what two slopes does its drainage belong? Trace the Fall line between the Piedmont and Tidewater regions (p. 43). Name the principal rivers. Name two mountain ranges; a mountain peak. Locate the chief sounds; three capes. What part of the state is swampy? Locate the capital; a city near the coast; four other cities.

MAKING ROSIN, SOUTH CAROLINA.

INTERIOR OF TOBACCO FACTORY, NORTH CAROLINA.

The forest-covered mountains of the western part of the state yield valuable hardwood lumber. In the Piedmont region corn, cotton, tobacco, and wheat are raised. Much of the Tidewater region is swampy or covered with open pine forests, where turpentine and rosin are produced. Rice, peanuts, sweet potatoes, and early vegetables are important crops in the light sandy soils of this region.

The manufacture of cotton is increasing rapidly, the mills already consuming more cotton than is raised in the state. Other important industries are lumber milling, and the manufacture of tobacco, flour, and cottonseed oil.

Wilmington, an important cotton market, is the chief seaport of the state, from which great quantities of lumber and naval stores are shipped. *Charlotte* is a great cotton-manufacturing center. *Asheville*, the commercial center of the western part, is a famous health resort. *Raleigh*, on the Fall line, has important cotton mills and tobacco factories. *Greensboro* and *Winston* have large tobacco factories.

South Carolina. Between what two states is South Carolina? What river separates it from Georgia? Describe the surface. Which are its two largest rivers? Locate the capital; the other chief cities.

More than one third of the cultivated land of South Carolina is devoted to cotton. The swampy Tidewater region yields much rice, the state ranking second in the Union in this product. The cultivation of early fruit and vegetables for the Northern markets is an important industry. From the pine forests lumber and naval stores are obtained. Phosphate rock, much used as a fertilizer, is dug in the Tidewater region. Cotton weaving, lumber milling, rice cleaning, and making fertilizers and cottonseed oil, are the chief manufacturing industries.

Charleston, one of the leading cities of the South, owes its prosperity largely to its fine harbor. The first engagement of the Civil War took place at Fort Sumter in this harbor. Much cotton, rice, lumber, and fertilizers are shipped from this port.

Columbia, the capital, is on the Fall line. Its fine water power is used by several large cotton factories. *Greenville* and *Spartanburg* manufacture cotton cloth.

Georgia. What states border Georgia? What rivers form part of the boundary? What are the chief rivers of Georgia draining the Atlantic slope? the Gulf slope? What part of the state is drained by the Mississippi system? Trace the divides of these three slopes. Where is Okefinokee Swamp? Locate the capital; the other chief cities.

Georgia, one of the leading cotton-growing states, also produces large crops of corn, sweet potatoes, peaches, and melons, besides some sugar and rice. The pine forests yield much lumber, and more turpentine and rosin than any other region in the world. There are valuable quarries of marble and granite in the north. Georgia is a leading state in the production of marble. There are coal and iron mines in the mountains of the north. The fine water powers along the Fall line give Georgia a high manufacturing rank among the Southern states. The chief manufactures are cotton, lumber, flour, naval stores, and cottonseed oil.

Atlanta, the capital, has grown rapidly and is one of the greatest commercial cities and railroad centers of the South. It owes its prosperity largely to its location near the southern end of the massive Blue Ridge, where communication is easy with the North and with both the eastern and the western group of Southern railroads. It has cotton mills and many other manufactories.

Savannah was the first place settled in the state. Though eighteen miles from the ocean, it has one of the deepest harbors on the Southern coast. The first steamship to cross the Atlantic sailed from this port. Savannah ships much cotton, rice, and lumber, and more naval stores than any other port in the world.

SHIPPING COTTON, SAVANNAH, GA.

STEEL WORKS, NEAR BIRMINGHAM, ALA.

A LOAD OF COTTON, VICKSBURG, MISS.

Augusta, *Macon*, and *Columbus*, on the Fall line, have many cotton mills. *Athens* is an educational center and an important cotton market. *Brunswick* is a shipping port of growing importance.

Florida. What states border on Florida? What waters? Name its chief bays; capes; rivers. Trace the main divide. Which slope embraces the greater part of the state? Locate the capital; the four chief cities.

The surface of Florida is everywhere low and flat, and the sluggish streams have numerous lakelike expansions. The southern part of the peninsula has been formed by additions to the mainland of successive lines of coral reefs, or *keys*, that grew up in the warm, shallow water along the coast (§ 67, p. 18). This part of the state is even now mostly a great marsh called "the Everglades."

The raising of early vegetables and fruits, especially oranges, is an important industry. The manufacture of cigars, lumber, and naval stores is also important. Phosphate rock is mined and exported. The mild climate has made the state a favorite winter resort for invalids.

Jacksonville, the business center of the state, exports lumber and oranges, and is a popular winter resort. *Pensacola* is engaged chiefly in shipping lumber. *Tampa* is an important shipping point for southern Florida and has cigar factories. *Key West*, the most southerly city in the Union, manufactures cigars from Cuban tobacco, and exports sponges.

St. Augustine is the oldest town in the United States, and contains fine hotels for winter guests.

Alabama. Bound Alabama. Trace the main divide of the state. What rivers drain most of the southern slope? Into what bay do they flow? What river drains the northern slope? Into what does it flow? Locate the capital; the other chief cities.

Southern Alabama is a flat region of pine forests, where lumbering is the chief industry. The central and northwestern parts are rolling or hilly, and produce cotton, corn, and other crops. Among the Appalachian ridges of the northeast more coal is mined than in any other Southern state, and more iron ore than in any other state except Minnesota and Michigan. Iron and steel can be made there so cheaply that Alabama has become the fourth state in the Union in their manufacture.

Mobile, at the head of Mobile Bay, is the oldest city in the state. It is a great cotton-shipping port, and has large lumber mills. *Birmingham* and *Anniston* are in the mining region, and have many iron furnaces and rolling mills. *Montgomery*, the capital, is an important trade center.

Mississippi. What states border Mississippi? What water boundaries has it? What river in the western part of the state is really a large bayou (§ 53) of the Mississippi? By what river is the extreme northeastern part of the state drained? Locate the capital; the chief cities.

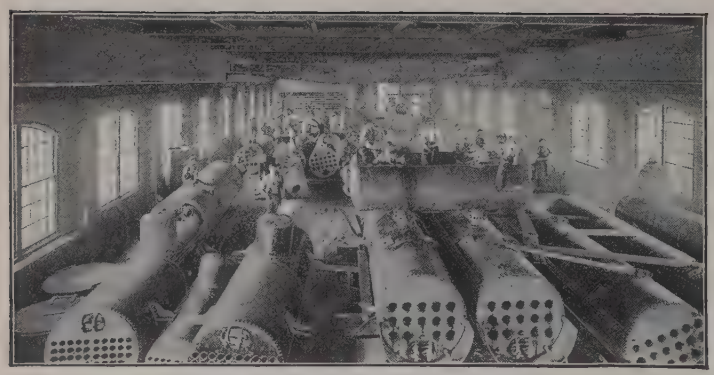
The broad, low flood plain of the Mississippi includes all the part of the state between that river and the Yazoo, and is one of the most fertile regions of the Union. The uplands farther east are also very fertile. More than half the land under crops in Mississippi is devoted to cotton raising. Lumbering is also an important industry in the south. On the Gulf coast are several seaside resorts.

Vicksburg is a cotton market and the largest city of the state. *Meridian* is the commercial center of eastern Mississippi. *Natchez* ships much cotton.

ORANGE TREE, FLORIDA.

Tennessee. What states border Tennessee? What is its western boundary? its eastern? What plateau crosses the state? This is one of the Allegheny plateaus. What tributaries of the Ohio cross the state? Compare the slopes of the eastern and western parts of the state as indicated by these rivers. Locate the capital; the other chief cities.

Tennessee is divided into three regions by the Tennessee river and the Cumberland plateau. Cotton growing is confined chiefly to the low western region. Much corn, tobacco, wheat, fruit, vege-



BOILER SHOP, CHATTANOOGA, TENN.

tables, and fine stock are raised in the beautiful farming region of middle Tennessee. East of the plateau lumbering and the mining of coal and iron are important industries. Beautiful variegated marble is quarried in east Tennessee, and phosphate rock in middle Tennessee.

Tennessee is one of the leading Southern states in the production of flour, lumber, iron and steel, tobacco, and cottonseed oil.

Memphis is situated on a bluff overlooking the Mississippi River, high above the floods that are common in this part of its course. Because of its safety from overflow, Memphis rapidly grew to be an important river port, and since the building of a great railroad bridge here across the river it has become an important railroad center. It has a large trade in cotton, and many machine shops, and is an important manufacturing center for lumber and cottonseed oil.

Nashville, the capital, was founded at a salt spring where wild game came to lick the salt-incrusted rocks. From a famous hunting post, it soon became an important trading point because of its river route to the lower Mississippi and the upper Ohio. With the building of railroads it became an important commercial city. Flour and fertilizers are among its manufactures.

Knoxville, the trade center of eastern Tennessee, has foundries, rolling mills, and flour mills. *Chattanooga* is in the region where coal and iron ore are mined, and manufactures iron and steel. Being near the gorge which the Tennessee River has cut through the Cumberland plateau, it has become an important railroad center. *Jackson* is the center of a considerable trade.

Arkansas. Bound Arkansas. What great tributary of the Mississippi flows through it? Name the mountains. In what direction does the state slope? Locate the capital and other chief cities.

Nearly one half of the state is occupied by the broad flood plains of the Mississippi and Arkansas rivers, and these produce great crops of cotton, corn, and peaches. From the forest-covered uplands valuable hardwood timber is obtained. Cottonwood and cypress grow in the lowlands. Coal and fine sandstone for whetstones are obtained from the rock folds in the western part of the state. South of the Ozark ridges, in the region of folded rocks, occurs a group of very celebrated hot springs.

Little Rock, the capital, has manufactures of cottonseed oil and lumber. *Fort Smith* is the center of the coal region. *Pine Bluff*, on the bluff forming the western margin of the great Mississippi flood plain, is a shipping point for cotton and lumber. *Hot Springs*, a town of hotels, is a famous health resort.

SAWMILL, ARKANSAS.

Louisiana. What states border on Louisiana? What waters? In what general direction does its surface slope? What is the largest tributary of the Mississippi in the state? What bayou flows to the Gulf from near the mouth of the Red River? Because of this bayou the mouth of the Red River is sometimes said to be the head of the Mississippi delta. What lake or arm of the Gulf is in the southeastern part of the state? Locate the capital; the chief city; one other city.

SUGAR WORKS, LOUISIANA.

Fully half of the state lies in the low flood plains of the Mississippi and Red rivers. These are protected from overflow by levees (p. 45) and produce great quantities of sugar cane and rice — far more of each than is produced in any other state. Much of the uncultivated surface is covered with canebrakes and swampy forests. Cotton growing is confined largely to the uplands. Rich petroleum fields, recently developed in the southwest, have started a new industry in the state. The chief manufactures are refined sugar, lumber, and cottonseed oil.

New Orleans, the largest city of the South, is on the Mississippi River, about one hundred miles from its mouth. Ocean vessels ascend to the city to receive the cotton, wheat, and other freight that comes down the river or by rail from all parts of the Mississippi valley.

Owing to these unrivaled natural advantages for commerce, New Orleans has become one of the great cities of the country and one of the greatest cotton-shipping points

in the world, in spite of certain disadvantages of location. Most of the city between the river and Lake Pontchartrain is so low that, to protect it from overflow, it is surrounded by levees, over which the drainage and sewage is pumped into Lake Pontchartrain.

Sailing vessels reach the heart of the city by the lake and canals, but steamers generally use the river, especially since the deepening of one of the river mouths by means of artificial banks called *jetties*.

SHIPPING COTTON, HOUSTON, TEX.

Much sugar is made and refined in New Orleans.

The city and the state were settled by the French, and many descendants of these settlers still live there and speak the French language.

Shreveport is a cotton market. *Baton Rouge*, the capital, is built on a bluff above the river.

Texas. Bound Texas. Describe the surface and its general slope. Trace through the state the divide of the Mississippi basin. Mention three rivers south of this divide. How does Texas rank among the states of the Union in area? (map, p. 50.) Describe the coast. Name the bays. Locate the capital; four cities in the south; three cities north of the capital; one city in the west.

Texas is by far the largest state in the Union. Its surface in general is a smooth slope, descending from the dry plateau and mountain ranges of the extreme west.

The warm, moist lowlands have valuable forests and rich petroleum fields, and produce sugar cane and more cotton than any other state. The higher, cooler, and drier central prairie region produces good crops of wheat, corn, and fruit; and on the pastures of this region and of the Great Plains farther west are raised great numbers of cattle, horses, mules, and sheep.

Texas is one of the great manufacturing states of the South; lumber milling, flour milling, and the making of cottonseed oil being the chief industries.

Many of the people of Texas are of Spanish-Mexican descent.

San Antonio is a great market for live stock, wool, and hides, and a growing health resort. *Houston* is an important railroad and commercial center in the southern part of the state, as also are *Dallas* and *Fort Worth* in the north. *Galveston*, the chief seaport, is one of the greatest cotton shipping points of the world. *Austin*, the capital, and *Waco* are important trade centers. *El Paso* is a railroad center and a health resort. *Laredo* is a commercial center.

Oklahoma. Bound Oklahoma. What river crosses the state and receives most of its drainage? What river forms part of its southern boundary? Describe the surface and its general slope, in comparison with that of Texas. Locate the capital; three other cities.

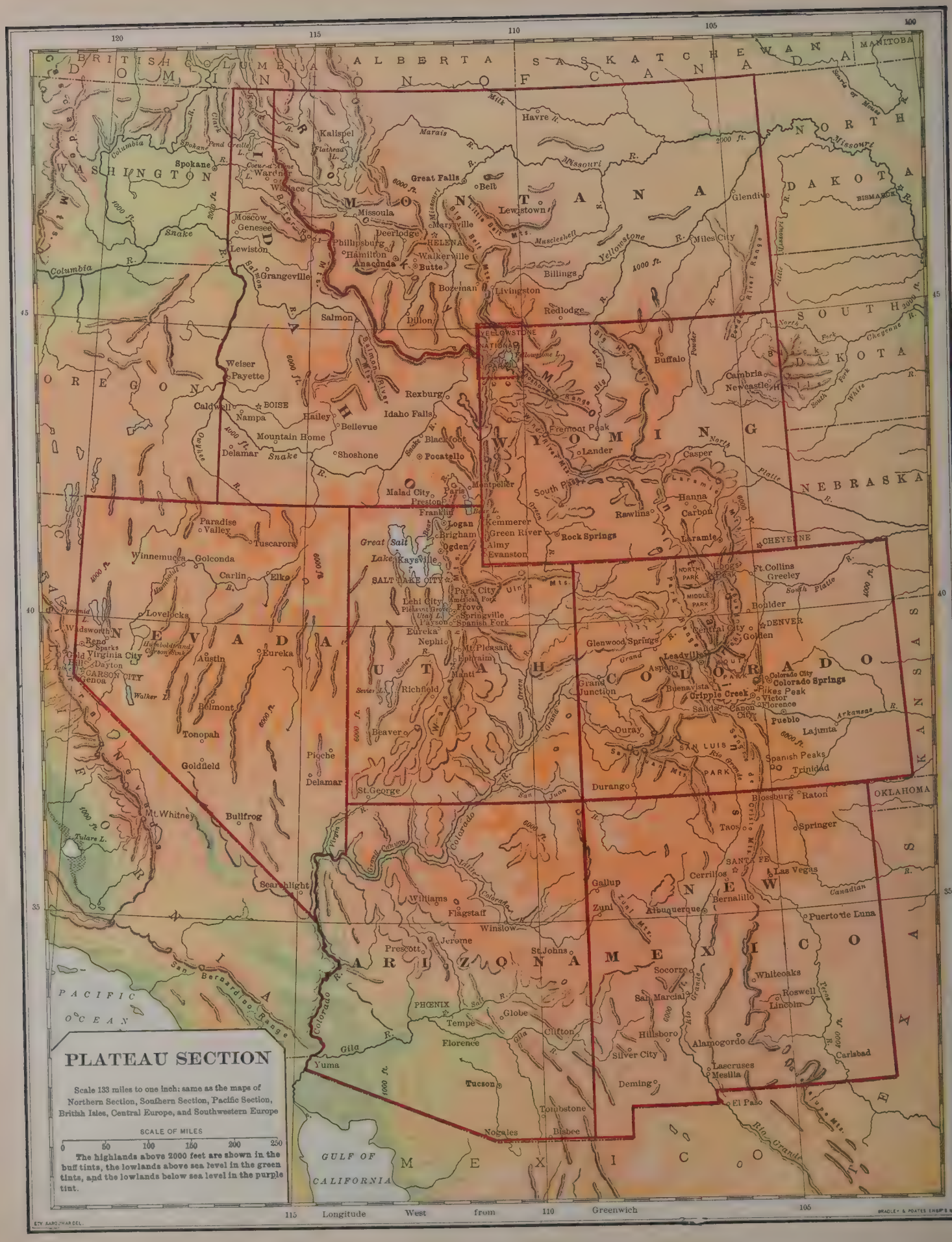
Oklahoma was the last state in the Union to be settled by white men. For more than half a century this region was called Indian Territory, and was set aside as a home for Indians removed from other parts of the country. About one fifth of the Indians of the United States now live in Oklahoma, mostly in the eastern part of the state; many of them are civilized and progressive citizens. It was in 1889 that the first part of Oklahoma was opened to white settlers, and since then the population has grown very rapidly. There are now about as many negroes as Indians, and more than ten times as many whites.

Most of Oklahoma is an undulating plain which gradually increases in elevation towards the west; but in the south and east there are some low mountains. The soil is very fertile and produces large crops of corn, cotton, wheat, and fruit. There is much excellent pasturage, and stock raising is carried on extensively. Flour and cottonseed oil are the chief manufactures. Bituminous coal and petroleum are obtained in the eastern part of Oklahoma, and granite in the southwest.

Guthrie, the capital, *Oklahoma*, *Muskogee*, and *Ardmore* are important trade centers.

Supplemental Work. Read chapters 13–19, "Carpenter's Geographical Reader, North America." Describe, as fully as New Orleans is described, one other city or place in this section.

CATTLE RAISING, OKLAHOMA.


PLATEAU SECTION
Scale 133 miles to one inch; same as the maps of Northern Section, Southern Section, Pacific Section, British Isles, Central Europe, and Southwestern Europe
SCALE OF MILES
0 50 100 150 200 250
The highlands above 2000 feet are shown in the buff tints, the lowlands above sea level in the green tints, and the lowlands below sea level in the purple tint.
Longitude West from Greenwich
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
DOMINION OF CANADA
WASHINGTON
OREGON
CALIFORNIA
NEVADA
IDAHO
MONTANA
WYOMING
UTAH
COLORADO
ARIZONA
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
PACIFIC OCEAN
GULF OF CALIFORNIA
MEXICO
Columbia R.
Snake R.
Missouri R.
Yellowstone R.
Colorado R.
Rio Grande
Arkansas R.
Platte R.
Great Salt Lake
Spokane
Kalispel
Wallace
Moscow
Lewiston
Grangeville
Salmon
Weiser
Payette
Caldwell
BOISE
Nampa
Hailey
Bellevue
Mountain Home
Delamar
Shoshone
Rexburg
Idaho Falls
Blackfoot
Pocatello
Malad City
Preston
Paris
Montpelier
Franklin
Logan
Brigham
Ogden
Kaysville
SALT LAKE CITY
Park City
Lehi City
Provo
Springville
Spanish Fork
Eureka
Nephi
Mt. Pleasant
Ephraim
Manti
Richfield
Beaver
Paradise Valley
Winnemucca
Golconda
Tuscarora
Carlin
Elko
Lovelocks
Wadsworth
Reno
Sparks
Gold Hill
Virginia City
Dayton
CARSON CITY
Genoa
Austin
Eureka
Belmont
Tonopah
Goldfield
Pioche
Delamar
St. George
Mt. Whitney
Bullfrog
Tulare L.
Searchlight
Williams
Flagstaff
Winslow
Prescott
Jerome
St. Johns
PHŒNIX
Tempe
Globe
Florence
Clifton
Gila
Yuma
Tucson
Tombstone
Nogales
Bisbee
Deming
Silver City
Hillsboro
Alamogordo
Lascruses
Mesilla
El Paso
Socorro
San Marcial
Whitcoaks
Roswell
Lincoln
Carlsbad
Gallup
Zuni
Albuquerque
Bernalillo
Cerrillos
SANTA FE
Las Vegas
Taos
Springer
Blossburg
Raton
Durango
Ouray
Grand Junction
Glenwood Springs
Aspen
Leadville
Buena Vista
Cripple Creek
Salida
Canon City
Pueblo
Lajunta
Spanish Peaks
Trinidad
Colorado City
Colorado Springs
Pikes Peak
Victor
Florence
Central City
Golden
DENVER
Boulder
Ft. Collins
Greeley
Longs Peak
NORTH PARK
MIDDLE PARK
SOUTH PARK
SAN LUIS PARK
Rock Springs
Green River
Kemmerer
Almy
Evanston
Lander
Fremont Peak
Casper
Rawlins
Hanna
Carbon
Laramie
CHEYENNE
Buffalo
Cambria
Newcastle
Havre
Great Falls
Belt
Lewistown
Glendive
Missoula
Deerlodge
Hamilton
Anaconda
HELENA
Walkerville
Butte
Marysville
Bozeman
Livingston
Billings
Miles City
Redlodge
Dillon
Salmon
YELLOWSTONE NATIONAL PARK
Yellowstone L.
Big Horn Mts.
Wind River Mts.
Wind River Range
Big Horn R.
Powder R.
Tongue R.
North Fork
South Fork
Cheyenne R.
Little Missouri R.
Milk R.
Marais R.
Musselshell R.
Little Belt Mts.
Big Belt Mts.
Bitter Root Mts.
Salmon River Mts.
Sawtooth Range
Owyhee Mts.
Humboldt R.
Carson Sink
Walker L.
Pyramid L.
Mono L.
Sevier L.
Utah L.
Great Salt Lake
Virgin R.
Grand Canon
Colorado R.
Gila R.
Salt R.
San Bernardino Range
Sierra Nevada Mts.
Wasatch Mts.
Uinta Mts.
Book Cliffs
Grand R.
Green R.
San Juan R.
Canadian R.
Pecos R.
Rio Grande
Zuni Mts.
Sandia Mts.
Sacramento Mts.
Organ Mts.
Guadalupe Mts.
Davis Mts.
Big Bend
Coeur d'Alene L.
Pend Oreille L.
Flathead L.
Kootenai R.
Clark Fork
Spokane R.
Snake R.
Columbia R.
Salmon R.
Lewis R.
Bitter Root R.
Big Blackfoot R.
Missouri R.
Milk R.
Marais R.
Musselshell R.
Yellowstone R.
Little Missouri R.
Powder R.
Tongue R.
Big Horn R.
Wind River Mts.
Wind River Range
Big Horn Mts.
Owyhee R.
Humboldt R.
Walker L.
Pyramid L.
Mono L.
Sevier L.
Utah L.
Great Salt Lake
Virgin R.
Grand Canon
Colorado R.
Gila R.
Salt R.
San Bernardino Range
Sierra Nevada Mts.
Wasatch Mts.
Uinta Mts.
Book Cliffs
Grand R.
Green R.
San Juan R.
Canadian R.
Pecos R.
Rio Grande
Zuni Mts.
Sandia Mts.
Sacramento Mts.
Organ Mts.
Guadalupe Mts.
Davis Mts.
Big Bend
Coeur d'Alene L.
Pend Oreille L.
Flathead L.
Kootenai R.
Clark Fork
Spokane R.
Snake R.
Columbia R.
Salmon R.
Lewis R.
Bitter Root R.
Big Blackfoot R.
Missouri R.
Milk R.
Marais R.
Musselshell R.
Yellowstone R.
Little Missouri R.
Powder R.
Tongue R.
Big Horn R.
Wind River Mts.
Wind River Range
Big Horn Mts.
Owyhee R.
Humboldt R.
Walker L.
Pyramid L.
Mono L.
Sevier L.
Utah L.
Great Salt Lake
Virgin R.
Grand Canon
Colorado R.
Gila R.
Salt R.
San Bernardino Range
Sierra Nevada Mts.
Wasatch Mts.
Uinta Mts.
Book Cliffs
Grand R.
Green R.
San Juan R.
Canadian R.
Pecos R.
Rio Grande
Zuni Mts.
Sandia Mts.
Sacramento Mts.
Organ Mts.
Guadalupe Mts.
Davis Mts.
Big Bend

THE PLATEAU SECTION

Which states of the Plateau Section are crossed or bordered by the Rocky Mountains? Which states lie partly in the Great Plains? Which states lie partly in the Columbia plateaus? (map, p. 42.) Which lie partly in the Colorado plateaus? Which lie partly in the Great Basin? Which half of the Union embraces this section? How does the rainfall in this section compare with that in the eastern half of the Union? (map, p. 48.)

This is the highland section of our country. In general the surface is about a mile high, but the mountain ranges and many of the plateaus are much higher. Practically the only lowland in the section is in the extreme southwest.

The Rocky Mountains extend from northwest to southeast through the central part, making this the most rugged part of the United States. Except in the extreme north and south, the lowest passes across this chain have an elevation greater than the highest points of the Appalachian Mountains, and very many of the peaks reach heights of over two miles, where it is too cold for vegetation to grow.

East of the mountains the section embraces a wide belt of the smooth but elevated surface of the Great Plains. West of the mountains the plateau surface is much broken by deep canyons, by lines of cliffs many miles in length, and by numerous detached mountain ranges formed by tilted blocks (p. 46). Between these ranges, cliffs, and canyons, however, the plateaus are smooth and nearly level.

On the highland the summer days are usually hot, but because of the elevation the nights are cool. The winters in the north are long and very cold, but in the lowland of the south they are mild and almost snowless. In summer this lowland is one of the hottest parts of the United States.

Only on the mountain slopes and on the highest plateaus is there enough rainfall to support forest growth. Elsewhere the section is so dry that irrigation is necessary for successful farming. Much of the section, however, is covered with coarse grass, but in the Great Basin and southward are large desert tracts.

INDIANS OF THE GREAT PLAINS.

By far the most important industry is the mining of the metals silver, gold, copper, and lead. This section is one of the great silver-mining regions of the world, and it produces more than half of the gold, copper, and lead mined in the United States. Much of the lead is obtained from the silver ore. Enough coal to supply the wants of the section is mined from numerous small coal fields (map, p. 52).

PETTIT LAKE IN IDAHO.

Next to mining, herding is the most important industry. Large flocks of sheep pasture both on the Great Plains and on the high plateaus west of the Rocky Mountains. About half of the wool produced in the Union comes from this section. Herds of cattle also find pasturage on the Great Plains, and many are shipped east to be converted into beef.

Farming is confined mainly to lands that can be irrigated, either in the larger river valleys or where the waters from mountain streams can be led over the land. On such lands hay, grain, vegetables, and fruit are produced. In many parts of this arid region the Federal Government is building irrigating works.

On the lower slopes of the mountains, where there are forests, some lumbering is carried on.

The population of the section is very sparse (map, p. 49). There are not so many people in this whole section as there are in any one of a dozen single states in the eastern half of the country.

About one fourth of the Indians in the United States live in this section, and yet there are many more whites than Indians. The Indians live on *reservations* which the government has set apart for them, and within which no one else is allowed to settle.

Few railroads are necessary in a region so sparsely populated, and most of these are parts of transcontinental lines which connect the railroad systems of the East with the Pacific coast (map, p. 53).

Montana. Bound Montana. What part is most mountainous? Trace the continental divide across the state. What two great rivers are east of the divide? What two rivers are west? To what are they tributary? What lake is in the northwest? Locate the capital; the other chief cities.

Montana is one of the large states of the Union. More copper is mined in this state, more sheep are raised, and more wool is clipped than in any other state in the Union. The copper and much gold and silver are mined in the mountains. The great sheep ranges lie east of the mountains, where cattle are also raised; and hay, wheat, and oats are grown on extensive irrigated regions.

Copper Mine, Montana.

Butte, the chief commercial city, is one of the great copper-mining centers of the world. At *Anaconda*, a few miles distant, are vast works for the reduction of copper ore. *Great Falls* has large smelting works and is an important wool-shipping point. *Helena*, the capital, is in the mining region.

Idaho. What states and country border Idaho? What river drains the southern part? What rivers drain the northern part? What part is mountainous? Locate the capital.

Mining is very important. Idaho has become one of the great lead-producing states in the Union; the yield of silver and gold is also large. In the north the rainfall is sufficient for the growth of wheat in the valleys and for fine forests on the mountain sides, so that both agriculture and lumbering are carried on. There are extensive irrigated regions in southern and southwestern Idaho. *Boise* is in an excellent grazing region.

Wyoming. What states border Wyoming? Trace the continental divide through the state. What three river systems have headwaters in this state? What are the chief mountain ranges? Name the capital; two other towns. Locate the Yellowstone Park.

In a Colorado Gold Mine.

Sheep ready for Shearing, Wyoming.

Wool growing and coal mining are the chief occupations, though many cattle are also raised. Wyoming is the only state in the section where coal mines are more important than the mines of the metals. Yet silver and copper ores are smelted along the transcontinental railroad which crosses the southern part of the state.

Cheyenne and *Laramie* are railroad towns and important collecting and distributing centers. *Rock Springs* is in the coal region.

The **Yellowstone National Park** has been reserved from settlement by the Federal government. It contains the most wonderful geyser region in the world. There are also hundreds of hot springs whose basins are composed of beautifully colored mineral deposits from the cooling waters (§ 43, p. 13). Besides these there are several lakes, the Great Falls and canyon of the Yellowstone River, and many lofty mountain peaks. The park is visited every year by travelers from all parts of the world.

Colorado. Bound Colorado. Trace the continental divide across the state. Name four mountain ranges. Locate four "parks" among the mountains; three mountain peaks. What great rivers have headwaters within the state? Locate the capital; the other chief cities of the state.

Colorado is the oldest state in the section and contains the largest population. It is one of the great silver-producing regions in the world, and it ranks as the first state in the Union in the production of gold and of lead. There are also valuable coal mines, and petroleum and iron ore are produced. Considerable crops of hay, wheat, fruit, and garden produce are raised, chiefly east of the mountains, and herding is important in the "parks." Many invalids resort to Colorado because of its dry, pure air.

Denver is the receiving and distributing point for a wide mining and herding region. It is the chief railroad center of the state, and the largest city of the

BEET SUGAR FACTORY, UTAH.

section, having grown very rapidly since the discovery of gold in Colorado, just before the Civil War.

Pueblo has easy access by way of the Arkansas canyon into the silver- and lead-mining region in the mountains, and is also convenient to regions where coal, iron ore, and petroleum are obtained. It has smelting works, rolling mills, and machine shops. *Colorado Springs* is a great health resort. Near by is the beautiful "park" called the Garden of the Gods. *Leadville* and *Cripple Creek* are famous mining centers.

Utah. Bound Utah. What mountain range traverses the center of the state? What river drains the eastern half of the state? What large lake is in the state? What is the history of this lake? (p. 46.) Locate the capital of Utah; three other cities.

West of the Wasatch Mountains the state lies in the Great Basin and part of it is desert, but in the valleys along the west base of the mountains considerable crops of hay, grain, and vegetables are raised by irrigation. Much wool is also produced. The lead-silver mines make Utah one of the great lead-producing states. Flour and beet sugar are manufactured.

Salt Lake City is the business center of the state. Water from the mountains is led through the city in pipes and open ditches. *Ogden* is a railroad center on a transcontinental line. *Provo City* and *Logan* are trade centers of fertile irrigated regions.

Nevada. Bound Nevada. What parts of the state are drained by rivers flowing into the Pacific? What becomes of most of the streams in the state? Name the chief lakes. Which have no outlets? Locate the capital; three other cities.

Nevada lies chiefly in the Great Basin, and much of it is arid and desert land. Only along the valley of the Humboldt River, and in some of the mountain valleys, is agriculture carried on. Gold, silver, and lead are mined.

Reno, on a transcontinental railway, is the commercial center. *Goldfield* and *Tonopah* are mining centers.

New Mexico. Bound New Mexico. Trace the continental divide through it. What river system drains the west? What large river crosses from north to south? What rivers are east of the Rio Grande? Locate the capital; another city.

The chief industries of New Mexico are the herding of sheep and cattle, and copper and lead smelting. Coal, gold, and silver also are mined.

Many of the people are of Spanish descent and still speak the Spanish language. There are also many In-

PUEBLO, NEW MEXICO.

dians, among them several tribes of pueblo Indians, each of which builds its village or "pueblo" as a single great building, made of sun-dried brick. The pueblos are often several stories high.

Albuquerque, the largest city, is a railroad junction. *Santa Fe* was founded in 1582, but it was a thriving pueblo long before white men came to America.

Arizona. Bound Arizona. Name the principal streams. What part is lowland? Where is there a strip of lowland in the northern part? Locate the capital; another city.

The lowlands of Arizona are the driest and hottest part of the United States, though parts of the region produce excellent fruit and semitropical plants by the aid of irrigation. In the highland region copper mining is the most important industry; only two of the states produce more copper than Arizona.

Many of the people are of Spanish descent, and there are more Indians than in any other division of this section.

INDIANS OF ARIZONA.

Tucson is a mining center and contains works for the reduction of gold, silver, and copper ores. *Phœnix*, the capital and commercial center, is in a well-irrigated region.

Supplemental Work. Read chapters 24 and 31 of McMaster's "School History of the United States"; chapters 31–34, 38, 39, "Carpenter's Geographical Reader, North America"; "Through the Grand Canyon," in McGuffey's "Alternate Sixth Reader." Describe one city or scene in the Plateau states.

Longitude 125 West from 120 Greenwich 115
SAN FRANCISCO
AND VICINITY
Scale, 10 miles to one inch
CONTINUATION OF THE
ALEUTIAN ISLANDS
ALASKA
Scale 330 miles to one inch, same as the map of the United States
SCALE OF MILES
0 100 200 300 400 500
PACIFIC SECTION
Scale 133 miles to one inch, same as the maps of Northern Section, Southern Section, Platcau Section, British Isles, Central Europe, and Southwestern Europe
SCALE OF MILES
0 50 100 150 200 250
The highlands above 2000 feet are shown in the buff tints, the lowlands above sea level in the green tints, and the lowlands below sea level in the purple tint. The submerged part of the continental plateau is shown in the light blue tint.
DOMINION OF CANADA
WASHINGTON
OREGON
CALIFORNIA
PACIFIC OCEAN
ARCTIC OCEAN
BERING SEA
Vancouver
Victoria
Seattle
Tacoma
Spokane
Portland
Astoria
Salem
Eugene
Roseburg
Medford
Ashland
Crescent City
Eureka
Redding
Red Bluff
Chico
Nevada City
Marysville
Sacramento
Stockton
San Francisco
Oakland
Berkeley
Alameda
San Jose
Santa Cruz
Monterey
Salinas
Fresno
Hanford
Visalia
Bakersfield
San Luis Obispo
Pt. Conception
Santa Barbara
Los Angeles
Pasadena
San Bernardino
Riverside
Redlands
Pomona
Santa Ana
San Diego
Yuma
Mt. Whitney
Mt. San Bernardino
Mt. Shasta
Mt. Hood
Mt. Rainier
Mt. Adams
Mt. St. Helens
Mt. Jefferson
Mt. Thielsen
Mt. Scott
Mt. Pitt
Lassen Peak
Mt. McKinley
Mt. Wrangell
Mt. St. Elias
Mt. Logan
Pt. Barrow
Pt. Lisburne
Pt. Hope
C. Deshnef
C. Prince of Wales
C. Nome
C. Romanzof
C. Newenham
C. Flattery
C. Disappointment
C. Blanco
C. Mendocino
Pt. Arena
Pt. Bonita
Pt. Lobos
Pt. San Pedro
Pt. San Mateo
Golden Gate
Alcatraz I.
Angel I.
Brooks I.
Goat I.
Yukon
Columbia
Snake
Colorado
Sacramento
San Joaquin
Klamath L.
Tulare L.
Owens L.
Mono L.
Great Salt L.
Gulf of California
Juneau
Sitka
Kodiak
Nome
Circle
Dawson
Fairbanks
Valdez
Unalaska I.
Umnak I.
Attu I.
Agattu I.
Atka I.
Amlia I.
Andreanof Is.
Rat Is.
Aleutian Is.
Shumagin Is.
Pribilof Is.
St. Lawrence I.
St. Matthew I.
Nunivak I.
Wrangell I.
Queen Charlotte Is.
Prince of Wales I.
Baranof I.
Chichagof I.
Afognak I.
Kodiak I.
Bristol Bay
Norton Sound
Kotzebue Sound
Behring Strait
Strait of Juan de Fuca
Puget Sound
Columbia R.
Fraser R.
Yukon R.
Sacramento R.
San Joaquin R.
Colorado R.
Rio Grande
Gulf of California
Santa Barbara Is.
Channel Is.
Coast Range
Cascade Range
Sierra Nevada
Rocky Mts.
Alaska Mts.
Romanzof Mts.
Brooks Range
Yukon Flats
Tanana Hills
Yukluk Divide
Kuskokwim R.
Kowak R.
Porcupine R.
Koyukuk R.
Tanana R.
Kuskokwim Mts.
Arctic Circle
Klondike Region
Forty Mile
Eagle
Circle
Valdez
Juneau
Sitka
Kodiak
Nome
Dawson
Fairbanks
Bellingham
Everett
Snohomish
Ballard
Olympia
Aberdeen
Hoquiam
Montesano
Centralia
Chehalis
Raymond
Puyallup
Roslyn
Ellensburg
Colfax
Sprague
Republic
North Yakima
Dayton
Walla Walla
Pendleton
The Dalles
Lagrande
Baker City
Boise
Vancouver
Portland
McMinnville
Oregon City
Albany
Corvallis
Harney L.
Malheur L.
Summer L.
Abert L.
Christmas L.
Warners Lakes
Rhett L.
Goose L.
Pyramid L.
Carson City
L. Tahoe
Walker L.
Mono L.
Owens Valley
Death Valley
Imperial Valley
Salton Sea
Colorado Desert
Mojave Desert
Lower California
Mexico
Ensenada
Guadalupe I.
Cedros I.
Santa Rosa I.
Santa Cruz I.
Santa Catalina I.
San Clemente I.
San Nicolas I.
San Miguel I.
Santa Barbara Is.
Channel Is.
Islands
Santa Barbara
Ventura
Redwood
Haywards
San Leandro
Alameda
Baden
San Bruno
San Bruno Pt.
San Mateo
San Mateo Pt.
Colma
Sausalito
Berkeley
Oakland
San Pablo
San Pablo Bay
San Rafael
Petaluma
Santa Rosa
Napa
Vallejo
Woodland
Grass Valley
Chico
Red Bluff
Redding
Eureka
Medford
Ashland
Roseburg
Eugene
Albany
Corvallis
Salem
McMinnville
Oregon City
Portland
Vancouver
Astoria
Longview
Kelso
Chehalis
Centralia
Montesano
Aberdeen
Hoquiam
Olympia
Tacoma
Puyallup
Roslyn
Ellensburg
Colfax
Sprague
Spokane
Republic
Bellingham
Everett
Snohomish
Ballard
Seattle
Port Townsend
Port Angeles
Victoria
Vancouver
Vancouver Island
Strait of Juan de Fuca
Puget Sound
Columbia R.
Snake R.
Fraser R.
Yukon R.
Sacramento R.
San Joaquin R.
Colorado R.
Rio Grande
Gulf of California
Juneau
Sitka
Kodiak
Nome
Circle
Dawson
Fairbanks
Valdez
Unalaska I.
Umnak I.
Attu I.
Agattu I.
Atka I.
Amlia I.
Andreanof Is.
Rat Is.
Aleutian Is.
Shumagin Is.
Pribilof Is.
St. Lawrence I.
St. Matthew I.
Nunivak I.
Wrangell I.
Queen Charlotte Is.
Prince of Wales I.
Baranof I.
Chichagof I.
Afognak I.
Kodiak I.
Bristol Bay
Norton Sound
Kotzebue Sound
Behring Strait
Strait of Juan de Fuca
Puget Sound
Columbia R.
Fraser R.
Yukon R.
Sacramento R.
San Joaquin R.
Colorado R.
Rio Grande
Gulf of California
Santa Barbara Is.
Channel Is.
Coast Range
Cascade Range
Sierra Nevada
Rocky Mts.
Alaska Mts.
Romanzof Mts.
Brooks Range
Yukon Flats
Tanana Hills
Yukluk Divide
Kuskokwim R.
Kowak R.
Porcupine R.
Koyukuk R.
Tanana R.
Kuskokwim Mts.
Arctic Circle
Klondike Region
Forty Mile
Eagle
Circle
Valdez
Juneau
Sitka
Kodiak
Nome
Dawson
Fairbanks

THE PACIFIC SECTION

What three states compose this section? What great mountain ranges traverse its central part? What part of the region receives ample rainfall? (p. 48.) What parts are dry?

The eastern part of the Pacific Section is on the high plateau bordered by the Sierra Nevada and the Cascade Mountains. These ranges are about as high as the Rocky Mountains, but they seem much higher and grander when viewed from the west, because on that side they rise from broad lowland valleys. Between these valleys and the Pacific are the low Coast Ranges.

Among the deep gorges and canyons in the western slope of the Sierra Nevada, the Yosemite valley is especially noted for its magnificent scenery. The Cascade Mountains are noted for their high volcanic cones. The higher peaks of both ranges reach the limit of perpetual snow, and their upper valleys contain small glaciers.

West of the Sierra Nevada and Cascade ranges there is not a great difference between summer and winter temperatures. The rainfall occurs in the winter months. In the north it is heavy, but in the south there is so little rainfall that irrigation is necessary for crops in many localities. Along much of the coast chilly and foggy weather is common, but south of Point Conception the weather is delightful throughout the year.

East of the Sierra Nevada and Cascade ranges the summers are hot and the winters cold. In the Columbia valley there is enough rainfall for farming, but southward there is hardly any rainfall.

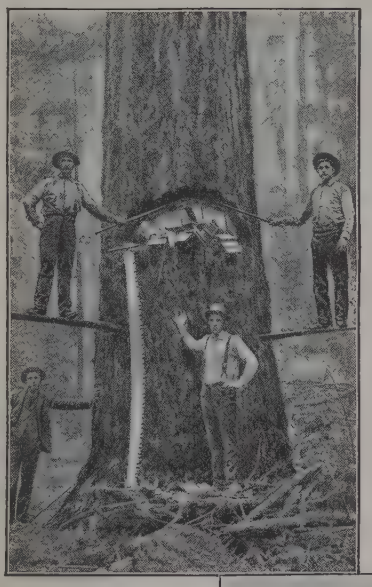
Agriculture is the principal industry in the valleys west of the great mountain ranges. Wheat is grown on the bottom lands, and grapes and other fruits on the foothills. Much wheat is also raised east of the Cascade Mountains in the Columbia valley. Great quantities of barley and hops are also grown in this section. In the drier regions, and on the mountain slopes, cattle and sheep raising is an important occupation. The wool clip of this section is very large.

The forests (map, p. 52) are the heaviest in the United States. Those in the central part of the section are composed chiefly of great redwoods, while farther to the north the Douglas fir or "Oregon pine" is the most valuable tree. In these regions lumbering is a great industry.

Gold mining is extensively carried on in the west slope of the Sierra Nevada, which is one of the richest gold fields in the world. Some of the gold is obtained in fine grains among the other rock waste deposited by mountain streams in their flood plains, but most of the gold is mined directly from veins in solid rock. Much quicksilver is mined in the central part of this section, and considerable coal in the north. The oil fields in southern California produce vast quantities of petroleum, which is much used for fuel.

Although the population, especially in the great valleys, is greater than on the Rocky Mountain highland, the section is still thinly settled. The whole section does not contain so many people as the city of New York. About one fifth the people are foreigners, mostly British, German, Italian, and Chinese.

LUMBERING, WASHINGTON.



The section is traversed by railroads from north to south along the line of the Sound, Willamette, and California valleys (map, p. 53). The most important railroads which enter the section, however, are the great transcontinental lines which cross the Rocky Mountain highland from the Mississippi valley.

The coast is closely bordered by the Coast Ranges, and has few bays and harbors. The ranges are broken in the north, however, by Puget Sound and the Columbia River, and in the central part by the Bay of San Francisco. These indentations afford safe harborage to the largest vessels, to them the railroads converge, and from them the foreign commerce of our Pacific coast is carried on.

WHEAT READY FOR SHIPMENT, WASHINGTON.

Washington. Bound Washington. What parts of the state lie in the Columbia valley? What sound is in the northwestern part of the state? By what strait is it joined to the Pacific? What part of the state is mountainous? Locate the capital; two other cities in the west; two in the east.

West of the Cascade Mountains the state is well covered with forests, which are its chief wealth. The largest lumber mills in the world are along Puget Sound. The fertile farming lands in the Sound valley and east of the mountains yield large crops of wheat, hops, and fruit. Coal is mined in the north more extensively than elsewhere in the section. The salmon fisheries of the Columbia River and Puget Sound add much to the wealth of the state.

Seattle, the commercial center, is in the coal and lumber region. It has an extensive commerce with Asian ports and is the terminus of two transcontinental railroads. *Tacoma* has a fine harbor. *Spokane* has excellent water power. *Wallawalla* is in a rich grain and fruit region.

SALMON FISHING, OREGON.

PICKING HOPS, OREGON.

Oregon. By what is Oregon bordered? Name its three mountain ranges. How does eastern Oregon compare with eastern Washington in elevation and slope? What part of the state is dry? How does the map indicate this? Name the capital; one other city on the Willamette; one at the mouth of the Columbia.

Magnificent forests of Douglas fir cover much of the western half of the state, and lumbering is an important industry. In the fertile Willamette valley great quantities of hay, wheat, oats, hops, and fruit are raised, and much fine wheat for export is grown by the aid of irrigation in northeast Oregon. The wool clip is large, and many cattle are raised. Gold mining is carried on chiefly in the mountains of the southwest and the northeast. The Columbia River salmon fisheries of Oregon are among the most valuable in the world.

Portland is one of the largest cities in the Northwest. The building of jetties at the mouth of the Columbia has made it possible for large steamships to ascend to the city, and its foreign commerce is extensive. *Astoria* is the center of the salmon-fishing and -canning industry, and ships much lumber.

California. Bound California. What mountain ranges are in the state? What two rivers drain the California valley? Into what do they flow? Locate the capital; the chief city; three other cities in the central part of the state; two in the south.

California is nearly three times as large as any state of the Union east of the Mississippi River, and is exceeded in size by Texas only. It is the first state in the Union in the production of fruit, especially grapes, plums, apricots, oranges, and lemons; and stands high in the production of hay, wheat, barley, sugar beets, hops, and live stock.

California supplies about one fourth of the gold and petroleum produced in the United States, and a large part of the world's yield of quicksilver.

Valuable lumber is obtained from the redwood forests in the northwestern part of the state. On the west slopes of the Sierra Nevada are several small groves of a kind of redwood, which contain some of the most gigantic trees in the world.

Among the chief manufacturing industries are sugar refining, fruit preserving, flour and lumber milling, shipbuilding, and wine making.

San Francisco, the largest city on the Pacific slope, lies on the peninsula between San Francisco Bay and the Pacific Ocean. It owes its growth chiefly to the fine harbor afforded by the nearly land-locked bay. The narrow entrance to the bay is called the Golden Gate.

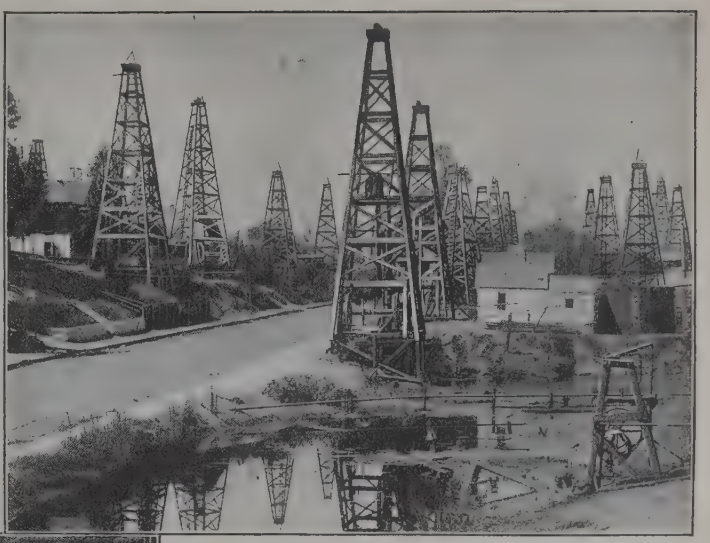
The city was founded by Spanish monks from Mexico as the mission of San Francisco, and continued a small settlement until the discovery of gold brought thousands of people to California. The place immediately became the most important commercial center of the Pacific coast.

An extensive ocean commerce is carried on with Japan, China, Australia, and the Pacific Islands, and also with Europe and the east coast of the United States. The heaviest commerce, however, is overland by the transcontinental railroads. A large part of the manufacturing of the state is cen-

DRYING FRUIT, CALIFORNIA.

tered in this city, the chief industries being sugar refining, meat packing, and the manufacture of machinery, clothing, and flour.

Los Angeles, the commercial center of southern California, is in the orange-growing region. *Oakland*, on the opposite side of the bay from San Francisco, is a great suburb and railroad terminus of that city. *Sacramento*, the capital, is in a fertile agricultural region. The city is protected from floods by levees. *San Jose* and *Stockton* are important trade centers. *San Diego* has a good harbor. *Alameda* and *Berkeley* are important suburbs of San Francisco, and at Berkeley is located the great University of California.



Petroleum Wells, Los Angeles, Cal.

Alaska. Where is Alaska? What country is east of it? What waters are north, west, and south? By what is it separated from Asia? What part is most mountainous? What great river traverses the country? To what nation does Alaska belong?

Canning Fruit, California.

Alaska lies at the northwestern extremity of North America, in the same latitude as southern Greenland. It is more than twice as large as Texas, but is very thinly settled. About half of the inhabitants are whites, and the rest are chiefly Indians and Eskimos.

The southern coast is very rough and mountainous. Some of the peaks are over three miles high, and one of them is the highest in North America. These mountains prevent the warm, moist winds of the Pacific from reaching the interior, which is therefore very cold during most of the year. Part of the interior is covered with open forests, but much of it is a bleak tundra (§ 101, p. 24). The southern slopes of the mountains are much warmer, receive abundant rains, and are covered with forests. The summits of the mountains are always snow-clad. Great glaciers creep down most of the larger valleys, many of them extending to the sea, where parts of them break off and float away as icebergs (see p. 16).

Gold Mining, near Cape Nome, Alaska.

Most of the people live near the southern and western coasts. The chief occupations are hunting fur-bearing animals, fishing for cod and salmon, and gold mining. Some hardy vegetables grow in the south, but the climate is too damp for grain.

Most of our sealskin garments are made from the skins of fur seals killed on or near the Pribilof Islands, which lie in Bering Sea and belong to Alaska. The sea otter, the marten or sable, the black bear, and the silver fox are also killed in Alaska for their valuable fur.

Gold is found in many places in Alaska. There are rich fields near Cape Nome and on the Koyukuk River. The Klondike gold field is in Canada, just across the Alaskan boundary, but is reached from the south coast of Alaska. Mining in Alaska is very costly and dangerous because of the long, cold winters and the scarcity of food.

Alaska belongs to the United States. It is ruled by a governor and other officers appointed by the Federal government at Washington. The chief settlements are *Nome* and *Juneau*, mining towns. *Skagway* is the port for trade with the mining settlements of the upper Yukon valley, which is reached by a railroad over White Pass. *Sitka*, a trade center of southern Alaska, is beautifully situated on Baranof Island.

Hawaii, Samoa, p. 149. **Porto Rico**, p. 94. **Philippines**, p. 138.

Supplemental Work. Read chapters 35–37, 40, "Carpenter's Geographical Reader, North America." Describe one city in this section as fully as San Francisco is described.

DOMINION OF CANADA AND NEWFOUNDLAND
Scale 330 miles to one inch, same as the maps of the United States, Mexico and Europe.
SCALE OF MILES
0 100 200 300 400 500
VIII 07.
MARITIME PROVINCES
SCALE OF MILES
0 25 50 75 100 125 150
THE ST. LAWRENCE VALLEY
SCALE OF MILES
0 25 50 75 100
ARCTIC OCEAN
PACIFIC OCEAN
ATLANTIC OCEAN
GREENLAND
BAFFIN BAY
Davis Strait
Hudson Strait
HUDSON BAY
James Bay
Gulf of St. Lawrence
Bay of Fundy
Gulf of Boothia
Fox Channel
Melville Sound
McClintock Channel
Barrow Str.
Lancaster Sd.
Jones Sd.
Smith Sd.
Melville Bay
Cumberland Sd.
Frobisher Bay
Baffin Land
Melville Pen.
Boothia Pen.
Cockburn Land
North Devon
Prince Albert Land
Banks Land
Victoria Land
Wollaston Land
Prince of Wales Land
North Somerset
King William I.
Southampton Island
Fox Land
Cumberland Pen.
Resolution I.
Mansfield I.
Meta Incognita
Akpatok I.
Nottingham I.
Digges I.
Mansel I.
Ellesmere I.
Grinnell Land
Grant Land
Findlays I.
Cornwall
North Lincoln
Prince Patrick I.
Melville I.
Baring I.
Cornwallis I.
Bathurst I.
Devon I.
Axel Heiberg I.
Ellef Ringnes I.
Amund Ringnes I.
Meighen I.
Borden I.
Brock I.
Prince Charles I.
Air Force I.
Coats I.
Southampton I.
Mansel I.
Akpatok I.
Nottingham I.
Digges I.
Resolution I.
Meta Incognita
Frobisher Bay
Cumberland Pen.
Cumberland Sd.
Fox Land
Baffin Land
Melville Pen.
Boothia Pen.
Cockburn Land
North Devon
Prince Albert Land
Banks Land
Victoria Land
Wollaston Land
Prince of Wales Land
North Somerset
King William I.
Southampton Island
Fox Channel
Gulf of Boothia
Melville Sound
McClintock Channel
Barrow Str.
Lancaster Sd.
Jones Sd.
Smith Sd.
Melville Bay
Davis Strait
Hudson Strait
Hudson Bay
James Bay
Gulf of St. Lawrence
Bay of Fundy
Arctic Circle
Great Bear Lake
Great Slave Lake
Great Fish or Back R.
Baker L.
Chesterfield Inlet
Duobaunt L.
Thelon R.
Ft. Churchill
Nelson R.
York Factory
Severn R.
Albany R.
Winisk R.
Attawapiskat R.
Kenogami R.
Moose R.
Abitibi R.
Mattagami R.
Missinaibi R.
Mistassini L.
Lake St. John
Saguenay R.
Ungava Bay
Koksoak R.
George R.
Great Whale R.
Big R.
Lake Nipigon
Lake of the Woods
Lake Winnipeg
Lake Manitoba
Lake Winnipegosis
Lake Athabasca
Athabasca R.
Peace R.
Slave R.
Mackenzie R.
Liard R.
Yukon R.
Porcupine R.
Klondike R.
Dawson
Mt. McKinley
Mt. Logan
Mt. St. Elias
Mt. Robson
Mt. Brown
Mt. Hooker
Mt. Edith Cavell
Rocky Mts.
Selkirk Mts.
Coast Mts.
Alaskan Mts.
Vancouver I.
Queen Charlotte Is.
Prince Rupert
Port Simpson
Skeena R.
Fraser R.
Thompson R.
Columbia R.
Kootenay R.
Okanagan L.
Shuswap L.
Kamloops
Nicola L.
Yale
Lytton
Quesnel
Barkerville
Cariboo
Chilcotin R.
Bella Coola
Dease L.
Stikine R.
Liard R.
Fort Nelson
Fort Simpson
Fort Liard
Fort Providence
Fort Resolution
Fort Smith
Fort Chipewyan
Fort McMurray
Athabasca Landing
Peace River
Grande Prairie
Dunvegan
Hudson Hope
Fort St. John
Fort George
Prince George
Quesnel
Ashcroft
Kamloops
Salmon Arm
Revelstoke
Golden
Field
Banff
Lake Louise
Canmore
Edmonton
Calgary
Red Deer
Battleford
Prince Albert
Saskatoon
Regina
Moose Jaw
Swift Current
Medicine Hat
Lethbridge
Macleod
Crowsnest Pass
Fernie
Cranbrook
Kimberley
Nelson
Trail
Rossland
Grand Forks
Penticton
Kelowna
Vernon
Armstrong
Enderby
Sicamous
Salmon Arm
Shuswap L.
Okanagan L.
Kootenay L.
Kootenay R.
Columbia R.
Arrow Lakes
Upper Arrow L.
Lower Arrow L.
Slocan L.
Slocan
New Denver
Nakusp

COUNTRIES NORTH OF THE UNITED STATES

THE DOMINION OF CANADA

What country borders the United States on the north? What circle crosses the northern part of Canada? In what zones is Canada? Compare it with the main body of the United States in size (map, p. 40).

What great bay is in Canada? Compare it with the Gulf of Mexico in size. What archipelago is north of Canada? What strait separates the eastern part of this archipelago from the mainland? What two peninsulas are on the north coast of Canada? What gulf is east of Canada? Name the four largest islands bordered by this gulf. What peninsula is south of this gulf? What large islands are off the west coast of Canada?

From the map on p. 36 locate the highlands of Canada. Compare the widths of the western highland in Canada and in the United States. Name the principal mountain ranges. What plateau is in the east? What part of Canada is lowland? Trace the divide of the Hudson Bay slope (p. 86 and p. 36). Name the principal river basins of that slope; of the Arctic slope; of the Gulf of St. Lawrence slope. Name the chief basins of the Pacific slope. In which of the basins of Canada are there large lakes? In which are the largest lakes?

From the maps on p. 38 describe the climate and rainfall of eastern, central, and western Canada.

The Dominion of Canada occupies most of the northern part of North America, including the Arctic Archipelago, and is larger than the United States and Alaska combined. Like the United States, it has an extensive highland in the west, a smaller and less lofty highland in the east, and between them a broad central lowland. Most of the Canadian lowland slopes to Hudson Bay, as most of the lowland in the United States slopes to the Gulf of Mexico, while a part of the lowland in both countries slopes to the Gulf of St. Lawrence.

Canada being so far north, the moisture in the winds from the Pacific often falls as snow on the western highlands, and the higher mountain ranges abound in glaciers.

CANADIAN ROCKY MOUNTAINS.

Their lower slopes are covered with heavy evergreen forests, and the region is noted for its scenery. Nearly all the large rivers which rise in this region flow from the melting ends of glaciers. The Laurentian plateau is lower and smoother than the western highlands, but it is too cold and bleak for cultivation.

The northern coast of Canada is so cold that neither trees nor food plants can grow there. Farther south a broad forest belt stretches entirely across the continent. In the southern part of this belt are valuable forests of pine and other building timber. Southern Canada, though the winters are long and cold, is well adapted to wheat and the hardier plants of the temperate zone. The basin of Lake Winnipeg is the chief wheat-growing region, and the peninsula between Lake Huron and Lake Erie is a fruit and dairy region.

In the cold, uninhabited regions of the north, caribou and fur-bearing animals are abundant. The fisheries off both coasts of Canada are among the most extensive in

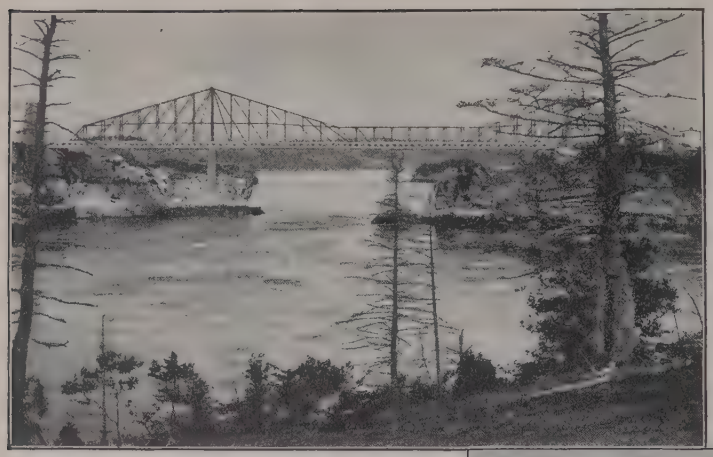
LOGS AND SAWMILL, VANCOUVER.

the world. Cod, herring, mackerel, and lobsters are the chief catch in the eastern coast waters, and salmon in the western.

The mineral product is important. Gold, silver, and copper are mined chiefly in the western part, and coal in both the east and the west. Nickel, petroleum, iron ore, asbestos, and lead are also found.

Although Canada is larger than the United States, the population is less than that of New York state, and is confined chiefly to the southern part.

The first white settlers were Frenchmen in the St. Lawrence basin. British settlers and their descendants form the greater part of the population, and their energy has made of Canada the most prosperous part of the Western Continent, after the United States. Many descendants of the French settlers still live in the lower St. Lawrence valley. They are mainly Catholics, while the



St. John River, at St. John, New Brunswick.

Parliament Building, Ottawa.

A Trading Post of the Hudson Bay Company.

greater part of the English are Protestants. Farther west there are many "half-breeds" of mixed French and Indian descent.

In northern Canada are a few thousand Eskimos and Indians. In winter the Eskimos live along the coast, but in summer they migrate inland, where caribou are abundant. The Indians are hunters and trappers. The valuable furs which they procure are sold to the Hudson Bay Company, which has established trading posts throughout this region.

Canada belongs to Great Britain, but has a form of government something like that of the United States. There are nine *provinces*, similar to our states, each with its local government. The people of each province elect representatives to a *Parliament*, like our Congress, which makes laws for the whole Dominion. But instead of an elected president, as in our country, Canada has a governor general appointed by the king of Great Britain. The provinces are all in the southern part of Canada. Most of the northern part of the country is still a wilderness without local government.

Prince Edward Island, in the Gulf of St. Lawrence, is the smallest province. What city is its capital?

The province of **Nova Scotia** includes the peninsula on the mainland, and the island of Cape Breton. The fisheries are very valuable, and from this province comes most of the coal mined in eastern Canada. *Halifax*, the capital, is the chief British naval station in North America.

From **New Brunswick** lumber and cured fish are exported. *Fredericton* is the capital, and *St. John* the largest city and chief port.

Quebec is one of the oldest and most populous provinces. A large part of the population is of French descent. The city of *Quebec* is one of the oldest in North America. The upper city, on a high cliff overlooking the St. Lawrence River, is surrounded by fortifications; the business part of the city lies along the river bank. *Montreal*, the metropolis of eastern Canada, lies at the mouth of the Ottawa River and at the head of navigation for ocean steamers on the St. Lawrence. Except when the river is blocked with ice both of these cities are great shipping points for lumber, wheat, and dairy products.

Ontario borders the Great Lakes and is the most prosperous and wealthy province. *Toronto*, an important commercial center, is the capital. *Ottawa*, the capital of the whole Dominion, is a great lumber center.

Quebec.

Both Ontario and Quebec contain vast forests of valuable timber, and lumbering is perhaps the chief industry. Farming is also very important. Large crops of oats, wheat, potatoes, and apples are raised, and much cheese and butter are produced for export.

Manitoba lies in the basin of Lake Winnipeg in Canada's great wheat region. This region is mostly open prairie, and it extends westward up the broad valleys of Assiniboine and Saskatchewan rivers, through the new provinces of **Sas-**

WHARVES AT MONTREAL.

katchewan and **Alberta**. The cheap and fertile land of this whole region is being very rapidly taken up by immigrants from all parts of Europe and from the United States. *Winnipeg*, the capital of Manitoba, is the largest Canadian city west of Toronto, and is growing rapidly. *Regina*, the capital of Saskatchewan, is a stock-raising center. *Calgary* and *Edmonton*, in Alberta, are stock-raising and coal-mining centers.

British Columbia, which borders on the Pacific, is the largest province. Gold and coal mining, lumbering, and fishing are the chief employments. *Victoria*, on Vancouver Island, is the capital. *Vancouver*, the terminus of a Canadian transcontinental railway, is the commercial center and chief seaport.

Northern Canada. The chief wealth of northern Canada is derived from the fur trade. The district of Yukon, however, is more important for the rich gold mines around Dawson in the Klondike region.

Most of the export trade of Canada is with Great Britain. The imports are largely from the United States. From Montreal, St. John, and Halifax steamship lines run to European ports, and from Vancouver there are steamship lines to Japan and Australia. From Montreal to Vancouver the Canadian government has constructed a great transcontinental railroad, which is connected by branches with the railroad system of the United States. By this road considerable traffic between Europe and Asia crosses Canada.

CANADIAN DOG TEAM.

Newfoundland. The island of Newfoundland, together with the Labrador coast, forms a British colony by itself, and is not a part of Canada. The interior of the island is a wilderness. The chief occupation is fishing, and many of the islanders live along the coast of the mainland during the fishing season. *St. Johns* is the capital.

When the French gave up Canada and Newfoundland to Great Britain, they retained the two small islands of **St. Pierre** and **Miquelon**, south of Newfoundland, which they use as fishing stations.

Supplemental Work. Read chapters 41 and 42 of "Carpenter's Geographical Reader, North America."

DANISH AMERICA

What two islands rise from the continental plateau between Europe and America? (map, p. 8 and p. 36.) Are these islands nearer to America or to Europe? Which of them is the larger?

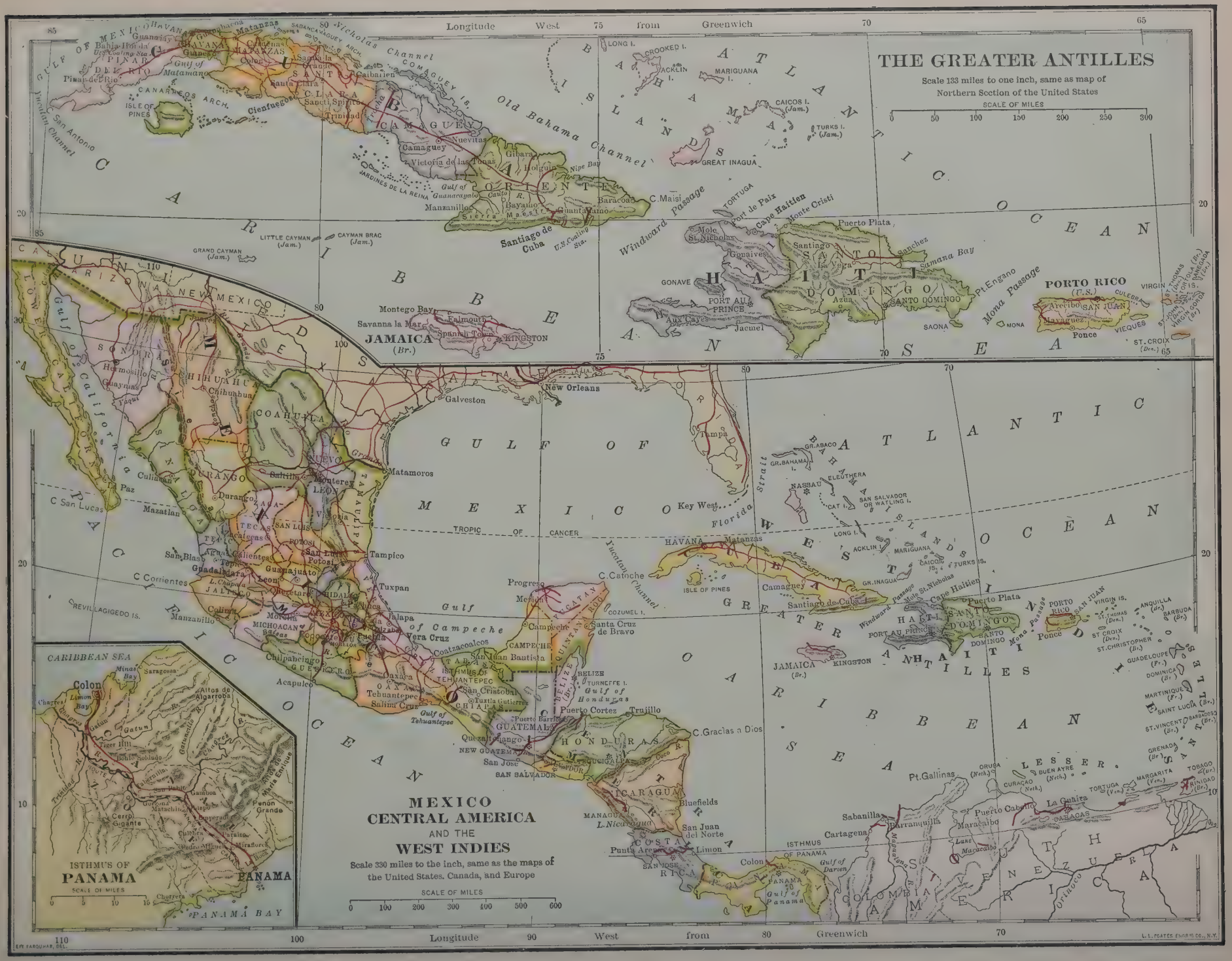
Greenland. Nearly the whole of Greenland is covered hundreds of feet deep by a continental glacier (§ 58). It is only near the coast that the surface of the land is

HARBOR AT VANCOUVER.

not covered with ice. The jagged coast line of southern Greenland indicates a sinking coast (§ 28). Perhaps it is the great weight of the ice sheet that causes the sinking. In places the ice sheet extends into the sea, forming long ice cliffs. Icebergs broken from these cliffs are carried southward by ocean currents and at certain seasons make the navigation of the Atlantic dangerous as far south as Newfoundland.

In the coast region of the south mosses and lichens grow, with patches of grass and a few flowering plants. There are also a few stunted trees, but they rarely grow higher than a man's head. The principal wild animals of the land are the musk ox, the reindeer, the arctic fox, and the polar bear. The coast waters are frequented by seals,

GOVERNMENT BUILDING, VICTORIA.


THE GREATER ANTILLES
Scale 133 miles to one inch, same as map of Northern Section of the United States
SCALE OF MILES
0 50 100 150 200 250 300
MEXICO
CENTRAL AMERICA
AND THE
WEST INDIES
Scale 330 miles to the inch, same as the maps of the United States. Canada, and Europe
SCALE OF MILES
0 100 200 300 400 500 600
ISTHMUS OF PANAMA
SCALE OF MILES
0 5 10 15
Longitude West from Greenwich
Old Bahama Channel
Windward Passage
Mona Passage
Yucatan Channel
Florida Strait
Gulf of Mexico
Caribbean Sea
Gulf of Campeche
Gulf of Honduras
Gulf of Tehuantepec
Gulf of Darien
Gulf of Panama
Lake Maracaibo
Isthmus of Panama
Isthmus of Tehuantepec
Tropic of Cancer
Santiago de Cuba
Cape Haitien
Port de Paix
Monte Cristi
Puerto Plata
Mole St. Nicholas
Gonaives
Santiago
Sanchez
Samana Bay
Pt. Engano
Port au Prince
Azua
Santo Domingo
Aux Cayes
Jacmel
Saona
Mona
Arecibo
San Juan
Mayaguez
Ponce
Culebra
Vieques
St. Croix
Virgin Is.
Jamaica
Montego Bay
Savanna la Mar
Falmouth
Spanish Town
Kingston
Grand Cayman
Little Cayman
Cayman Brac
Isle of Pines
Jardines de la Reina
Nipe Bay
Guantanamo
Baracoa
Cape Maisi
Camaguey
Nuevitas
Gibara
Holguin
Victoria de las Tunas
Manzanillo
Bayamo
Cienfuegos
Trinidad
Caibarien
Sagua la Grande
Santa Clara
Sancti Spiritus
Matanzas
Havana
Pinar del Rio
Bahia Honda
Guanajay
Guines
Colon
Jucaro
Batabano
Canarreos Arch.
San Antonio
Jardines de la Reina
Key West
Tampa
Galveston
New Orleans
Matamoros
Monterey
Saltillo
Durango
Chihuahua
Hermosillo
Guaymas
Mazatlan
La Paz
C San Lucas
C Corrientes
Tampico
San Luis Potosi
Zacatecas
Aguas Calientes
Guadalajara
Guanajuato
Tuxpan
Progreso
Merida
Campeche
Vera Cruz
Jalapa
Puebla
Mexico
Tuxtla Gutierrez
San Cristobal
Oaxaca
Acapulco
Manzanillo
Colima
Revillagigedo Is.
Belize
Turneffe I.
Puerto Barrios
Guatemala
New Guatemala
San Jose
San Salvador
Puerto Cortez
Trujillo
C. Graclas a Dios
Bluefields
Managua
L. Nicaragua
San Juan del Norte
Punta Arenas
Limon
San Jose
Costa Rica
Nicaragua
Honduras
Quezaltenango
Tehuantepec
Salina Cruz
Chiapas
Tabasco
Campeche
Yucatan
Quintana Roo
Cozumel I.
C. Catoche
Isle of Pines
Cayman Is.
Grand Cayman
Bahama Is.
Gr. Abaco
Gr. Bahama
Nassau
Eleuthera
San Salvador or Watling I.
Cat I.
Long I.
Acklin I.
Mariguana
Caicos Is.
Turks Is.
Gr. Inagua
Great Inagua
Crooked I.
Jamaica
Kingston
Port au Prince
Santo Domingo
Haiti
Cuba
Puerto Rico
Virgin Is.
St. Thomas
St. John
St. Croix
St. Christopher
Guadeloupe
Dominica
Martinique
Saint Lucia
St. Vincent
Barbados
Grenada
Trinidad
Tobago
Anguilla
Barbuda
Lesser Antilles
Curaçao
Oruba
Buen Ayre
Margarita
Tortuga
Pt. Gallinas
Sabanilla
Barranquilla
Cartagena
Maracaibo
Puerto Cabello
La Guaira
Caracas
Venezuela
Colombia
Orinoco R.
Panama
Colon
Panama Bay
Chagres R.
Gatun
Gatun Lake
Culebra Cut
Panama Canal
Punon Grande
Cerro Gigante
Tiger Hill
Bohio Soldado
Minas Bay
Limon Bay
Altos de Algarrobo
Saragossa
Chorrera
Pedro Miguel
Miraflores
La Boca
Empire
Culebra
Matachin
Gamboa
Tabernilla
Obispo
Gorgona
Trebuloso
Chagres
Rio Grande
Rio Trinidad
Rio Gatun
Rio Gatuncillo
Rio Obispo
Rio Chagres
Rio Boqueron
Rio Pequeni

walruses, whales, and fish. Millions of eider ducks and other aquatic birds nest along the coast.

But few people live in Greenland, and most of them are Eskimos. The Eskimos live in low, filthy hovels made of loose stones, or sometimes of blocks of snow and ice. They fish and hunt for sea animals, using the flesh for food, the fur for clothing, and the fat for fuel. On the southwest coast there are a few small trading settlements of white men from Denmark.

Eskimos in Eskimo Boats.

Iceland is about as large as Kentucky. It is a rugged plateau containing many volcanoes, several of which are active and cause frequent earthquakes. Hot springs are numerous, and there are famous geysers. Parts of the island are covered with ice fields, and the deep fiords of the northern coast are often packed with ice brought in by the Arctic currents. The southern coast is much less broken and is kept free from ice by the warm currents from the south.

The climate, though raw and moist, is moderated in the south by winds from the ocean. Grass and vegetables grow well, though it is too cold for grain. There are many aquatic birds, and the coast waters abound in excellent fish.

Iceland was settled by people from Norway and Denmark long before Columbus discovered America, and their descendants still live there, chiefly in the southern part of the island. They are thrifty, intelligent, well-educated people, and are employed chiefly in raising sheep, cattle, and horses, and in fishing.

The people make their own laws; but the governor is appointed by the king of Denmark.

Supplemental Work. Read chapter 61, "Carpenter's Geographical Reader, Australia," etc.; "My Arctic Journal," by Josephine D. Peary; or "Farthest North," by Fridtjof Nansen.

COUNTRIES SOUTH OF THE UNITED STATES

MEXICO

What country borders the United States on the south? In what zones is Mexico? What waters border it? What peninsulas does it contain? From the map on p. 36 locate the lowlands of Mexico. What part of the country is highland? Name and locate the chief mountain range. Are there many large rivers in Mexico? Name one that drains a small part of the country in the northwest.

Mexico occupies the part of North America south of the United States between the Gulf of Mexico and the Pacific.

There is a strip of lowland along either coast, but most of Mexico lies on the Rocky Mountain plateau. The plateau is bordered by mountain ranges corresponding to the Rocky and the Cascade Mountains, but the western range is much higher and more continuous than the eastern. In the north the plateau is about three fourths of a mile high, but it rises gradually toward the south. In this region are many volcanoes, some active and some extinct. The volcano Orizaba is about three and one half miles high. Earthquakes are not uncommon throughout Mexico.

Mount Orizaba, the Highest Peak of Mexico.

Owing to the tropical position of Mexico there is little difference between the temperatures of summer and of winter; but there is a great difference in temperature of regions at different elevations. The lowlands are always hot; the plateau is always temperate; and the higher mountain peaks are always snow-clad. The seasons of Mexico are the wet and the dry. Nearly all the rain falls during the summer months. The northern part has very little rain at any time (§ 93).

Plants and animals of both the North and the South American regions are found in Mexico. In the lowlands mahogany, rosewood, logwood, and vanilla grow in the dense forests, and rice, sugar cane, tobacco, cotton, and fruits are cultivated, as well as the cassava, from the root of which the natives make farina meal for their bread; and Sisal hemp, or henequen, of which cordage and hammocks are made. On the lower mountain slopes coffee is cultivated,

MAGUEY FIELD, MEXICO.

and higher up are open forests of oak, pine, and other trees of the temperate zones. On the plateau grain and beans are the chief crops. Mexico exports Sisal hemp, coffee, and cabinet and dye woods.

A characteristic Mexican plant is the maguey, or "century plant," from which is made a kind of fermented drink called *pulque*. It is a species of this plant that yields the Sisal hemp.

In the drier portions of the plateau the raising of cattle, horses, and sheep is an important industry, and cattle and hides are exported.

The mines of Mexico are its chief source of wealth. Mexico is one of the great silver-producing countries of the world, and this metal and its ore form the chief exports. Copper, gold, and lead are also exported, as well as the beautiful stone called "Mexican onyx," much used for interior decoration.

The government of Mexico is modeled after that of the United States. The republic consists of twenty-seven states, two territories, and a federal district, like the District of Columbia. About one fifth of the people are white, mostly descendants of Spanish settlers; nearly one half are of mixed Spanish and Indian blood; and the

GRADING COFFEE, MEXICO.

COPPER SMELTER, MEXICO.

rest are pure Indians. Most of the land is owned by the white people. Many of the Indians are laborers in the mines, or on the stock "ranches," or farms. Nearly all Mexicans are Catholics.

Long before America was colonized by white men, the Indians of central Mexico, called Aztecs, had advanced nearly to the stage of civilization. They had formed a confederacy, and lived in pueblos built of stone; they cultivated corn by the aid of irrigation, wore ornaments of gold, and knew something of working other metals.

The manufactures of Mexico are mainly liquors, cotton cloth, tobacco, paper, and earthenware for home use.

The foreign commerce is carried on chiefly with the United States, both by sea and by the railroads which

STREET MARKET, CITY OF MEXICO.

connect the plateau region with the railroad system of the United States. An important railroad extends from the Atlantic to the Pacific coast, across the Isthmus of Tehuantepec, the narrowest part of Mexico.

Mexico, the capital and largest city of the republic, is located in the federal district. It is on the plateau in a great basin which contains several large lakes. The sewage of the city and the high-water overflow of the lakes are conveyed out of the basin by a drainage canal forty miles long, which for six miles of its length occupies a tunnel through the mountains. Railroads connect

BANANA PLANTS, CENTRAL AMERICA.

the city with the railroad system of the United States. Most of the buildings are low, and many of the dwellings are built around courtyards ornamented with flower gardens and paved with stone.

Guadalajara and *Puebla* are large and important railroad cities on the plateau. At Puebla are produced the most important manufactures of Mexico, among them the famous Mexican blankets. *Vera Cruz* is the chief Atlantic seaport. It is connected by railroad with the city of Mexico. The harbor is so shallow, however, that ships unload into small boats. *Guaymas* and *Acapulco* are important ports on the Pacific coast.

CENTRAL AMERICA

By what waters is Central America bordered? Which coast has the greater width of lowland? (map, p. 36.) In what direction does most of the country slope? Name the chief lake of Central America.

Central America occupies the narrow part of the continent southeast of Mexico.

The plateau here is neither so broad nor so high as in Mexico. The mountains near the Pacific coast contain active volcanoes, and severe earthquakes are frequent. The climate is similar to that of southern Mexico, but warmer and with a heavier rainfall on the north coast.

Central America is more uniformly forest-covered than Mexico, but there are large tracts of grass land in the interior. Coffee, bananas, sugar, cacao beans, rubber, hides, gold, and cabinet and dye woods are exported.

Belize, a strip along the west coast of the Gulf of Honduras, was settled by English logwood cutters, and is still a British colony The rest of Central America was settled by Spaniards. It consists of six small independent republics. Name them.

There are only a few thousand people of pure Spanish descent in the Central American states. Most of these are merchants and planters, and the foreign trade is in their hands. The people of mixed Spanish and Indian blood are more numerous than the whites, but more than half the entire population are pure-blooded Indians. Some of these are becoming civilized.

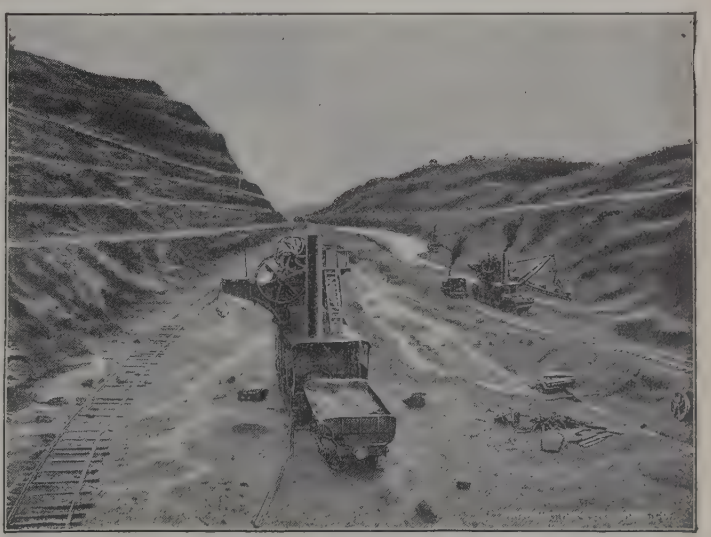
Guatemala and **Salvador** contain half the people in Central America. Name the capital of each.

What is the capital of **Honduras**? Honduras mahogany is specially noted.

What is the capital of **Nicaragua**?

The name **Costa Rica** means "rich coast." Coffee has been cultivated in this state for a hundred years, and bananas are exported to the United States. What is the capital?

Across the republic of **Panama** the United States controls a belt or zone ten miles wide, in which a ship canal is under construction from the Caribbean Sea to the Pacific Ocean. The completed canal will make a short water route between the east and west coasts of America. The cities of *Panama* and *Colon* (which are not included in the zone) are at the ends of the canal. They are at present connected by a railway over which is transported much foreign commerce.



WORK ON THE PANAMA CANAL.

THE WEST INDIES

What parallel of latitude crosses the central part of the West Indies? Between what bodies of water does this chain of islands lie? What strait and channel separate the chain from the mainland of North America? Measure the length of the chain, using the scale of miles. On the map of the United States (p. 50) measure the same distance west from New York city. Name the four largest islands of the chain.

The West Indies form an island chain about two thousand miles long north and east of the Caribbean Sea. The islands comprise three groups: the Greater Antilles, including the four largest islands of the chain; the Bahama group; and the Lesser Antilles.

The islands are partly volcanic and partly of coral formation; many of them are surrounded by coral reefs and some are subject to earthquakes. Most of the Lesser Antilles are high, and consist of volcanic rock. The islands of the Greater Antilles have broad lowland coast regions; much of Cuba is lowland. The Bahamas are

DRYING SPONGES, BAHAMAS.

low islands of coral limestone and broken shell. The area of all the islands together is about twice that of Pennsylvania, nearly half of this being in the island of Cuba.

The climate is tropical, but the heat is tempered by the trade winds. The rainy season occurs during our summer, and the dry season during our winter. Terrible hurricanes are not uncommon. Most of the islands have luxuriant tropical forests. The most valuable products are sugar cane, tobacco, coffee, and tropical fruits, "Spanish" mahogany and other cabinet and dye woods, rum made from sugar, cacao beans, sponges from the Bahamas, allspice and ginger from Jamaica, and asphalt from Trinidad.

ASPHALT LAKE, TRINIDAD.

The population is rather dense and is largely of Spanish or negro descent, for the Spaniards discovered and settled the islands and introduced many negroes from Africa to work the plantations.

Cuba is a republic under the influence of the United States. The soil is remarkably fertile and almost inexhaustible. Forests cover half the island and yield mahogany, lignum vitæ, ebony, logwood, and cedar. About one fifth of the world's cane-sugar crop, and much of the best tobacco for cigars, comes from Cuba. There are valuable iron and copper mines. The island is traversed by railroads.

Havana, the capital, is a large and important commercial city and the chief port. The choicest cigars are made here. *Santiago de Cuba*, near the iron and copper mines, is the largest seaport in the southeast.

Porto Rico belongs to the United States. It is the smallest of the Greater Antilles, but is about two thirds

SUGAR MILL, CUBA.

as large as Connecticut. It has even more people than that state and is therefore quite densely populated. About a third of the people are negroes; the rest are whites of Spanish descent.

The island is traversed from east to west by a range of low mountains, from which the forests have been largely cleared to make room for extensive coffee plantations. Sugar cane, tobacco, and rice are produced at lower elevations, and many cattle are raised.

San Juan, the capital, on the north coast, and *Ponce*, on the south coast, are the principal cities and ports.

The island of **Haiti** includes nearly one third of the area of the West Indies and consists of two independent negro republics. Name them. Years ago Haiti was a French colony, and a form of the French language is used by the negro inhabitants. Santo Domingo, how-

CUTTING SUGAR CANE, PORTO RICO.

ever, was a Spanish colony, and the Spanish language still prevails in that part of the island.

Nearly one sixth of the area of the West Indies belongs to Great Britain. **Jamaica**, **Trinidad**, and the little island of **Barbados** are by far the most important of the British West Indies. Barbados is the most densely settled island of the whole chain, and exports much sugar.

Guadeloupe and **Martinique** are French possessions, and, after Trinidad, are the largest islands of the Lesser Antilles.

Several small islands of the Lesser Antilles belong to the European kingdoms of Denmark and the Netherlands, and several near the northern coast of South America are part of the republic of Venezuela.

Supplemental Work. Read chapters 43–45, "Carpenter's Geographical Reader, North America," and chapters 51–60, "Australia and Islands of the Sea"; "The Boy Travellers in Mexico," by Thomas W. Knox; "At last: a Christmas in the West Indies," by C. Kingsley.

CACAO HARVEST, JAMAICA.

CORRELATIONS AND COMPARISONS

Size. Through how many degrees of latitude does North America extend? Through how many degrees of longitude? When it is midnight in the Pribilof Islands, what time is it in Newfoundland?

Coast. Name the chief seas and bays of the grand division; the chief peninsulas; the chief islands. Compare Greenland and Cuba in size; in surface; in climate. Compare Florida and Lower California in position; in climate; in formation. Compare Hudson Bay and the Gulf of Mexico. Compare the Chesapeake and San Francisco bays.

Surface. Name the chief mountain ranges of eastern and western North America, giving the direction, the general height, the formation, and the comparative age of each system. Name some mountains with jagged tops; some with smooth and level tops. Name and describe the chief plateaus of North America. Name and describe the lowlands.

Drainage. Name the chief lakes of North America. How are lakes formed? Where are streams generally rapid? Why? Where are streams sluggish? Why? Name some rivers which have built deltas; some which flow into estuaries; some which have cut canyons; some which meander through flood plains; some which are obstructed by falls. Explain the formation of deltas; estuaries; canyons; flood plains; falls. Name some rivers useful to commerce; some not useful.

Soil. Name the unproductive regions of North America. Which are so because the soil is too cold? too dry? too swampy? Where have glaciers made the soil more fertile? less fertile? How? Where are there alluvial plains? sandy plains? old lake beds?

Rock Formations. Explain the formation of the Tidewater region of eastern North America; of the Piedmont region. In what region are there mountain folds? In what region are there tilted strata? In what western region are there great outflows of lava? Where are there volcanoes in North America? Describe volcano formation. Where are there coal deposits? Describe the formation of coal; of peat.

Climate. Locate the heat belts of North America in summer; in winter. Describe five climatic belts or regions. Tell about the winds and rainfall of North America. Show by examples how climate may be affected by elevations of land; by latitude; by distribution of land and water; how climate may affect products and occupations. Describe the progress of a cyclone across North America; its path; its rotation, and the weather produced by its different parts. Where are there snow-capped mountains? mountain glaciers? continental glaciers?

Life. What are the three life regions of North America? Which is the largest? Give reasons for the existence of these regions. Where are there few large *wild* animals? Why? Give some uses to which the *native* plants and animals of North America are put.

People. In what parts of North America do people of the black race chiefly live? Tell what you know of their history. What peoples of the red race are found in North America? How do the Eskimos live? Where are they found? Where do the Indians chiefly live? Where were they most nearly civilized when America was discovered? What people of the white race chiefly inhabit North America? What nations early settled there? What parts of North America are most densely populated? least densely? Why? What forms of government do you know? Describe each. What parts of North America belong to European nations? Name the republics of North America. Tell what you know of the history of the North American nations. What religion prevails in North America? What are the other chief religions of the world? What are the two chief languages spoken in North America? In what parts is each spoken?

Industries. How does the United States rank in each of the seven great industries? What are the chief industries of British America? of Danish America? of Mexico and Central America? of the West Indies?

Locate the chief agricultural regions of North America. How does agriculture depend upon climate? What is irrigation? Where is it practiced? Tell where each of the following is grown, and why: wheat, corn, rice, hay, oranges, sugar cane, cacao, tobacco, cotton.

In what regions of North America are these animals raised: cattle; hogs; sheep; horses? Give the chief uses of each. Where are there fur-bearing animals? In what waters are obtained fish? sponges?

Tell where there are dense forests; open forests; oak, cottonwood, pine, cedar, cypress, mahogany, redwood.

What regions yield each of the following: anthracite coal, bituminous coal; petroleum, natural gas; iron, copper, gold, silver; marble? How are some of these formed? How obtained? How used?

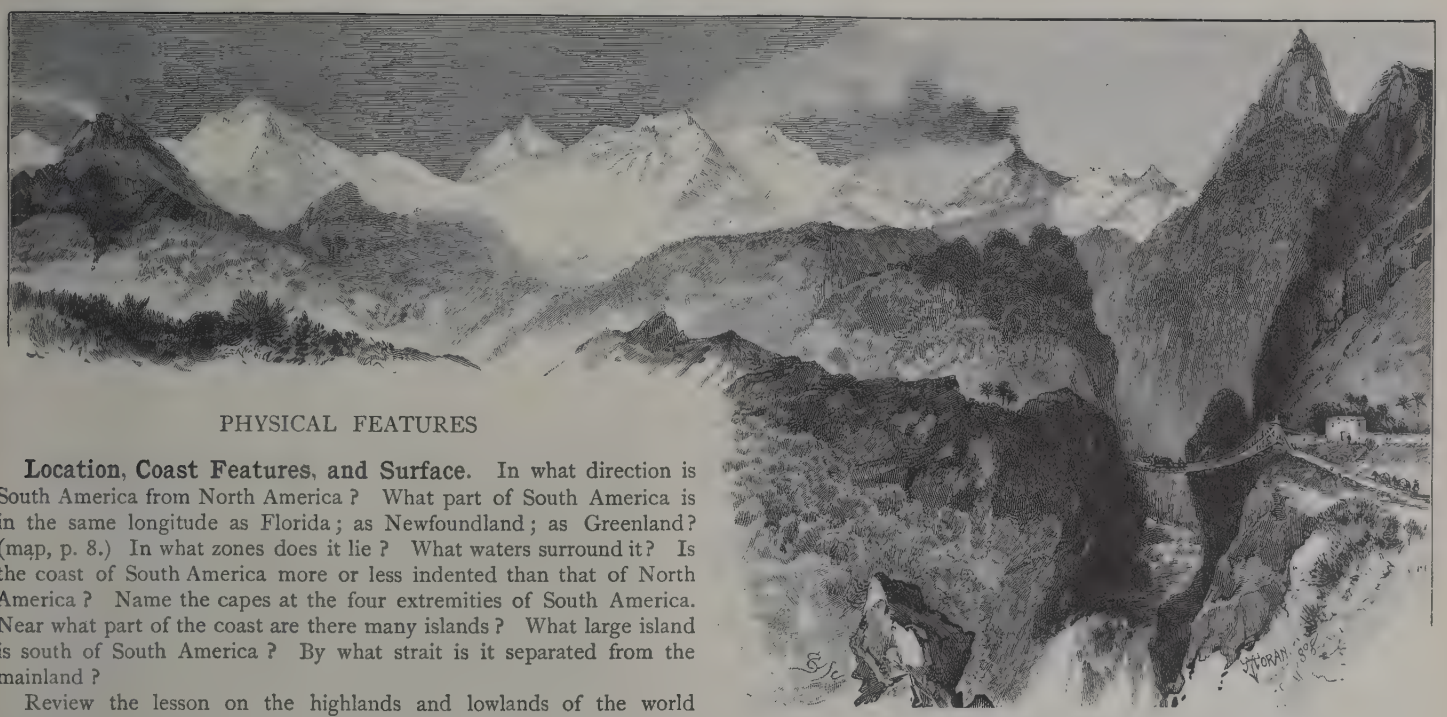
Where are the great manufacturing regions? Where are these articles made: cotton goods, woolen goods, clothing, silk goods, shoes; lumber, rubber goods, pitch; steel ships, iron and steel, glass, pottery, kerosene; butter and cheese, packed meat, refined sugar, flour?

Tell the chief trade advantages of each country of North America. Make a list of the chief trade centers, and tell the advantages of each. Show that surface forms affect railroad routes. Point out some canals.

Make a list of the capital cities in North America. What is a capital? Make a list of large cities, and tell of each the reason for its position or importance.

PHYSICAL MAP
OF
SOUTH AMERICA
Scale, 600 miles to one inch, same as the maps of North America, Eurasia, Africa, and Australia
SCALE OF MILES
0 100 200 300 400 500 600 700 800 900 1000
The highlands above 2000 feet are shown in the buff tints, the lowlands in the green tints, and the submerged part of the continental plateau in the light blue tint.
VIII 08.
GULF OF MEXICO
WEST INDIES
CUBA
HAITI
CARIBBEAN SEA
MEXICO
CENTRAL AMERICA
TROPIC OF CANCER
EQUATOR
TROPIC OF CAPRICORN
PACIFIC OCEAN
ATLANTIC OCEAN
CAPE VERDE IS.
ST. PAUL I.
FERNANDO NORONHA I.
TRINIDAD I. (To Brazil)
TRINIDAD (To Gr. Brit.)
GALAPAGOS IS. (To Ecuador)
CHILOE I.
CHONOS ARCHIPELAGO
WELLINGTON I.
FALKLAND IS. (To Gr. Brit.)
SOUTH GEORGIA (To Gr. Brit.)
Pt. Gallinas
Vol. Tolima
Vol. Cotopaxi
Vol. Chimborazo
C. Parina
Mt. Huascaran
Mt. Sorata
L. Titicaca
Mt. Illimani
Vol. Sahama
Mt. Aconcagua
C. Blanco
St. George Bay
Strait of Magellan
TIERRA DEL FUEGO
Cape Horn
C. St. Roque
C. Frio
Mt. Itatiaia
Plateau of Bolivia
Plateau of Brazil
Plateau of Guiana
Llanos
Andes
Amazon
Orinoco R.
Parana R.
Paraguay R.
Uruguay R.
Plata R.
Rio Negro
Rio Colorado
Magdalena R.
Maracaibo
Gulf of Panama
Isthmus of Panama
Gulf of Guayaquil
Sierra Nevada de Merida
Sierra de Parima
Sierra Pacaraima
Tumac Humac Mts.
Sierra do Espinhaço
Sierra do Mar
Sierra Geral
Sierra de Tandilia
Sierra de Ventana
Sierra de Tapalguen
Sierra de Cordoba
Sierra de Famatina
Sierra de Aconcagua
Sierra de Uspallata
Sierra de Chillan
Sierra de Nahuelbuta
Sierra de Valdivia
Sierra de Llanquihue
Sierra de Chonos
Sierra de Tarapaca
Sierra de Atacama
Sierra de Copiapo
Sierra de Coquimbo
Sierra de Aconcagua

SOUTH AMERICA



ANDES MOUNTAINS.

PHYSICAL FEATURES

Location, Coast Features, and Surface. In what direction is South America from North America? What part of South America is in the same longitude as Florida; as Newfoundland; as Greenland? (map, p. 8.) In what zones does it lie? What waters surround it? Is the coast of South America more or less indented than that of North America? Name the capes at the four extremities of South America. Near what part of the coast are there many islands? What large island is south of South America? By what strait is it separated from the mainland?

Review the lesson on the highlands and lowlands of the world (§§ 22–24). Where is the great highland region of South America? Compare it with that of North America in length; in width; in nearness to the coast; in general direction. What plateaus are in the eastern part of South America? Compare them with the eastern highlands of North America in size and position. Compare the great lowland of South America with that of North America in position; in size. Which has the greater area lower than 1000 feet elevation?

South America is but little more than two thirds as large as North America, and has much more nearly the regular shape of a triangle than the northern grand division. Few gulfs or bays break its coast line, and these are very small in comparison with Hudson Bay or even the Gulf of St. Lawrence.

The chief highlands of both grand divisions lie in the west, but the *Andes Mountains* are much loftier than the ranges of the North American highland, and are less broken. From the vicinity of the island of Trinidad nearly to the Strait of Magellan, they form a great wall along the north and west coasts. There are few passes across this chain less than two miles high, and many of the peaks are four miles in height. These peaks are the highest in America. Even in the torrid zone they always bear snow and glaciers near their summits, and in the south glaciers descend from the mountains to the sea.

Many of the high peaks are active volcanoes. Severe earthquakes are common throughout the chain, and sometimes cause great loss of life. On the west slopes of the Andes are many terraces and shell deposits high above present sea level, marking former levels of the sea beach, and indicating a comparatively recent upheaval of the coast (§§ 25–27).

In the north the Andes consist of three ranges separated by long river valleys. Near the equator they unite in a single high range. South of the equator the highland widens, forming the plateau of Bolivia, which is about two and one half miles high, and is bordered by two lofty ranges. South of the plateau of Bolivia the Andes extend to the Strait of Magellan as a single great range. This great range is bordered on the west by a much lower and broken range which extends close along the coast.

The northern part of the plateau of Bolivia is traversed by deep valleys draining northwardly. The southern part is smoother, for it was once the bed of a series of great lakes when the climate was moister than it is at present. As the climate changed, the lakes shrunk in size or dried up, leaving terraces, or old beach lines, to mark their former limits, like those about Great Salt Lake in Utah (p. 46). Lake Titicaca, the largest remnant of these former lakes, is about half as large as Lake Ontario.

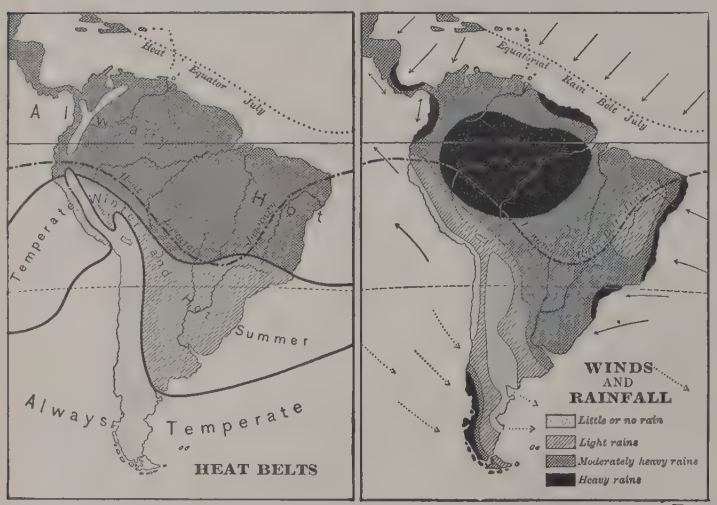
The Brazilian plateau is much lower than the Andean highland. Its height is about half a mile. Much of its

surface is rather level, but there are several mountain ranges, with at least one peak two miles high. In the east the plateau slopes abruptly to a narrow coast plain, but inland it merges gradually into the great central lowland.

In the north the smaller *highland of Guiana* reaches heights of about one and one half miles.

A vast lowland plain bordered by the three highland regions extends the entire length of the grand division, and from the Andes to the Atlantic. Low divides extend across this lowland from the Andes to the eastern highlands, and separate its surface into a northern, a central, and a southern slope. The slopes, however, are so gradual and the divides so low that they are imperceptible, and the characteristic features of the lowland are its flatness and its slight elevation above sea level.

The surface of this lowland is mostly covered with a fine clayey soil. Much of this region was doubtless formed beneath a shallow sea by sediment worn from the adjacent highlands, and then upheaved in comparatively recent times, like the Tidewater region of the Atlantic coast of the United States (p. 43).



Climate. Review the sections on the heat belts (§§ 79–82). What part of South America is always hot? What parts are always temperate? Mention a South American winter month. Review the sections on winds and rainfall (§§ 83–93). What winds prevail over the northern part of South America? over the southern part? Over what part of South America does the equatorial rain belt lie in January? Where does it lie in July? Where do the tropical calms cross South America? What parts of South America have heavy or moderately heavy rainfall? What parts have little or no rain?

There is comparatively little difference between the temperatures of winter and summer in South America. Most of the lowlands are always hot; in the extreme south they are stormy, chilly, and disagreeable, but seldom very cold; the elevated plateaus of the Andes are always temperate, and the higher summits always cold. In only a comparatively narrow central belt is there a notable difference between the temperature of summer and that of winter, and in this region the winters are seldom cold enough for the formation of ice.

The most plainly marked seasons are the wet and the dry, and they are determined by the position of the equatorial rain belt.

In our summer this belt lies north of the equator, and at this season there is generally least rain in South America. As the rain belt sweeps southward in our fall and winter, and northward again in our spring, the regions over which it passes have the heavy daily rains of the rainy season. At all times the trade winds from the southeast or the northeast blow far inland and discharge heavy rains wherever they are forced to rise. Hence, in the torrid zone, the east slope of the Andes is one of the rainiest regions in the world; but the Pacific slope, south of the rain belt, receives only the winds which have lost their moisture on the east slope, and this region is therefore very dry. In the south, where westerly winds prevail, the west slope receives a heavy rainfall, while the region east of the mountains is dry.

Drainage. Trace the continental divide of South America. Trace the divides of five great river basins which together embrace nearly all of the Atlantic slope, except its southern extremity. Which of these basins is largest? Name and locate the other four. Why are there no long rivers on the Pacific slope of South America?

The enormous amount of rain which falls on the Atlantic slope of South America gives to it some of the greatest rivers in the world.

The Amazon, while not so long as the Mississippi-Missouri, has a larger basin and discharges much more water into the ocean. It is much the largest river in the world.

The great river is several miles wide and is deep enough for the largest ocean steamers for more than a thousand miles above its mouth; large steamboats can ascend to the very foot of the Andes. When the river is flooded after the rainy seasons, it spreads out over the flat lowland to a much greater width, and it has built up a very wide flood plain, which is traversed by many broad, deep bayous. It has many large navigable tributaries, the Madeira being the largest from the south,

HEADWATERS OF THE AMAZON RIVER, PERU.

NATIVE BOAT ON SOUTH AMERICAN RIVER.

and the Rio Negro the largest from the north. Find the Tocantins River. Its estuary, Para River, is separated from the main estuary of the Amazon by Marajo Island. Because of this the Tocantins-Para River sometimes is not included in the Amazon system, though its estuary is connected with the Amazon and is always used by steamers entering this river from the ocean. The main Amazon estuary is filled with shifting sandbars near its mouth.

The Plata River, or Rio de la Plata, is really a great estuary formed by the sinking of the Parana River valley. Name the largest streams of the Parana system. The Plata or Parana basin is nearly as large as that of the Mississippi, and it discharges a much greater volume of water. The Parana is navigable for more than a thousand miles above its mouth, but the sediment it brings down has made much of the Plata estuary very shallow.

The Orinoco River has a smaller basin than the St. Lawrence, but the amount of water discharged is almost as great as that of the Mississippi. The Orinoco is more than a mile wide, and is navigable throughout most of its course in the lowlands. After the rainy season, which here occurs in the early summer, its floods convert much of its level valley into a great shallow lake. The Orinoco has a delta larger than the state of New Jersey.

The Magdalena River is a great commercial route far into the northern Andes.

The lower course of the São Francisco River is broken by falls where it descends into the coast plain, but its upper course is navigable for long distances.

The rivers in the southern part of the Atlantic slope contain very little water during much of the year. Many short mountain streams fed by the melting snow descend the west slope of the Andes, but few of them reach the sea. The water is used for irrigation in that dry region, or it evaporates before it reaches the coast.

Compare North and South America as to the number of lakes.

FALLS IN THE SÃO FRANCISCO RIVER.

TOPICS ON THE PHYSICAL FEATURES OF SOUTH AMERICA

I. WESTERN HIGHLANDS. Length. Height. Evidences of upheaval. Parts: northern — ranges, climate; central — ranges, plateau, climate; southern — ranges, climate. Passes. Glaciers.

II. EASTERN HIGHLANDS. Brazilian: height; surface; slopes; climate. Guiana: height; climate.

III. LOWLANDS. Surface. Slopes. Divides. Formation. Climate. Rivers: length; volume; mouths.

IV. COASTS. Bays and estuaries. Capes. Islands. Movements.

Supplemental Work. Make a sketch map of South America, putting in the chief rivers and highland regions. Model South America.

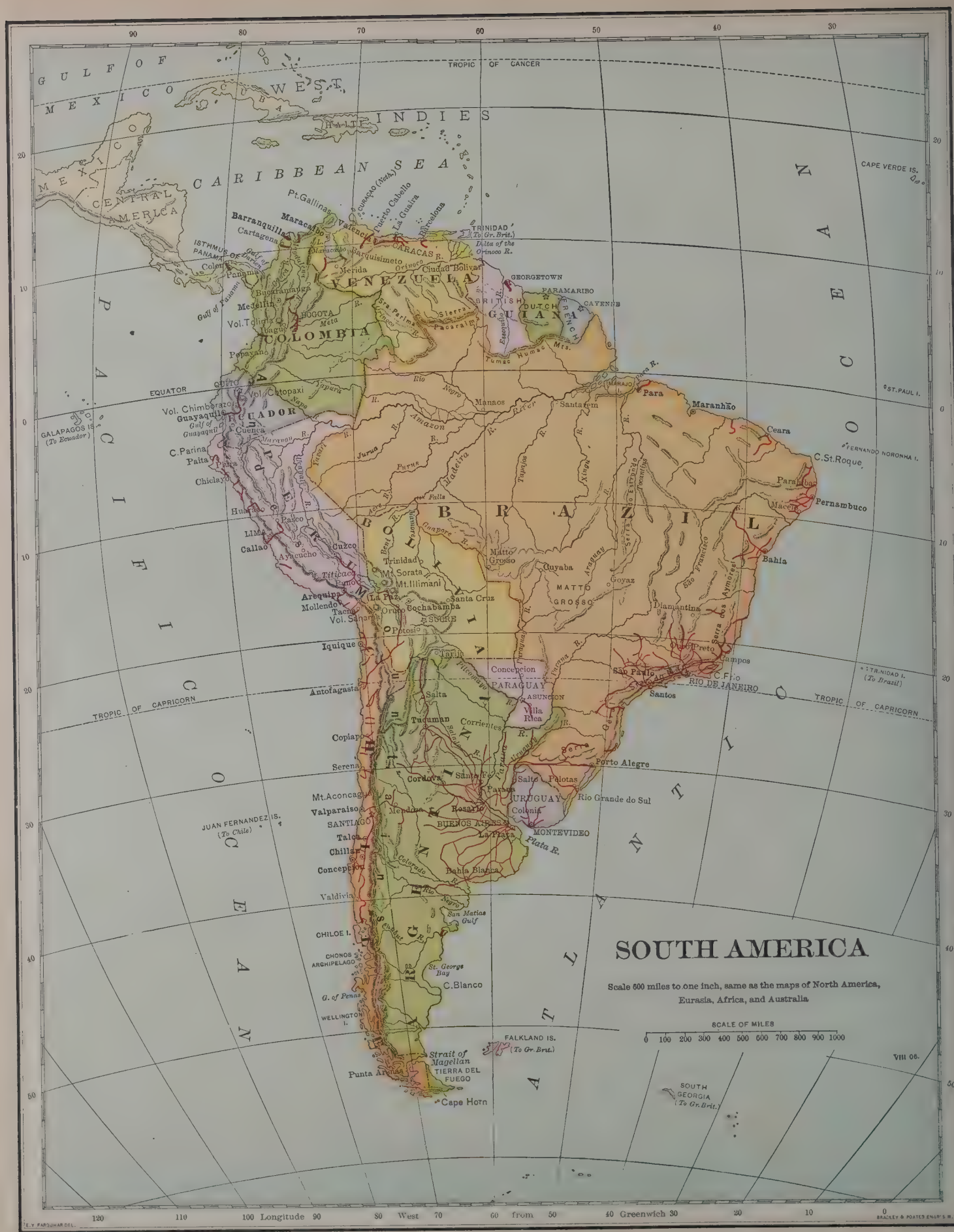
SOUTH AMERICAN FOREST.

VEGETATION AND ANIMALS

Review the sections on distribution of life (§§ 98–102). What parts of South America are forest-covered? Where are there open grassy regions? Where is the desert region? Why? Review the section on the South American region (§ 106).

Vegetation. The equatorial forests of South America, called *silvas* in the Amazon valley, are among the densest and most extensive in the world.

In the east are many nearly treeless *savannas* and *campos*, but in the central silvas, where the rainfall is heavier and more continuous, the damp and gloomy forests are almost unbroken for hundreds of miles. They


SOUTH AMERICA
Scale 600 miles to one inch, same as the maps of North America, Eurasia, Africa, and Australia
SCALE OF MILES
0 100 200 300 400 500 600 700 800 900 1000
VIII 06.
TROPIC OF CANCER
TROPIC OF CAPRICORN
EQUATOR
CARIBBEAN SEA
GULF OF MEXICO
WEST INDIES
CENTRAL AMERICA
PACIFIC OCEAN
ATLANTIC OCEAN
COLOMBIA
VENEZUELA
ECUADOR
PERU
BOLIVIA
BRAZIL
PARAGUAY
URUGUAY
CHILE
ARGENTINA
BRITISH GUIANA
DUTCH GUIANA
FRENCH GUIANA
Pt. Gallinas
Barranquilla
Maracaibo
Cartagena
Puerto Cabello
La Guaira
Barcelona
TRINIDAD (To Gr. Brit.)
Delta of the Orinoco R.
CARACAS
Ciudad Bolivar
GEORGETOWN
PARAMARIBO
CAYENNE
ISTHMUS OF PANAMA
Colon
Panama
Medellin
Bucaramanga
BOGOTA
Vol. Tolima
Popayan
Merida
Maracaibo
Orinoco R.
Meta R.
Sierra Parima
Sierra Pacaraima
Essequibo R.
Tumac Humac Mts.
Gulf of Panama
Quito
Vol. Cotopaxi
Vol. Chimborazo
Guayaquil
Gulf of Guayaquil
Cuenca
GALAPAGOS IS. (To Ecuador)
C. Parina
Paita
Piura
Chiclayo
Huaraz
Pasco
LIMA
Callao
Ayacucho
Cuzco
Titicaca L.
Puno
Arequipa
Mollendo
Tacna
Vol. Sahama
La Paz
Oruro
Cochabamba
SUCRE
Potosi
Trinidad
Mt. Sorata
Mt. Illimani
Santa Cruz
Iquique
Antofagasta
Copiapo
Serena
Mt. Aconcagua
Valparaiso
SANTIAGO
Talca
Chillan
Concepcion
Valdivia
CHILOE I.
CHONOS ARCHIPELAGO
JUAN FERNANDEZ IS. (To Chile)
G. of Penas
WELLINGTON I.
Strait of Magellan
Punta Arenas
TIERRA DEL FUEGO
Cape Horn
St. George Bay
C. Blanco
San Matias Gulf
Bahia Blanca
Colorado R.
Rio Negro
FALKLAND IS. (To Gr. Brit.)
SOUTH GEORGIA (To Gr. Brit.)
Rio Negro
Amazon R.
Madeira R.
Purus R.
Jurua R.
Tapajos R.
Xingu R.
Tocantins R.
Araguay R.
Paraguay R.
Parana R.
Falls
Guapore R.
Beni R.
Mamore R.
Manaos
Santarem
Para
Maranhão
Ceara
C. St. Roque
Parahiba
Pernambuco
Maceio
Bahia
Matto Grosso
Cuyaba
MATTO GROSSO
Goyaz
Diamantina
Serra dos Aymores
São Francisco R.
Rio Preto
Campos
San Paulo
C. Frio
RIO DE JANEIRO
Santos
Concepcion
PARAGUAY
ASUNCION
Villa Rica
Salta
Tucuman
Corrientes
Cordova
Santa Fe
Parana
Salto
Pelotas
Porto Alegre
Rio Grande do Sul
Colonia
Rosario
BUENOS AIRES
La Plata
MONTEVIDEO
Plata R.
Tarija
Pilcomayo R.
Bermejo R.
Uruguay R.
Iguazu R.
Salado R.
Colorado R.
Rio Negro
Madeira R.
Purus R.
Jurua R.
Tapajos R.
Xingu R.
Tocantins R.
Araguay R.
Paraguay R.
Parana R.
Falls
Guapore R.
Beni R.
Mamore R.
Manaos
Santarem
Para
Maranhão
Ceara
C. St. Roque
Parahiba
Pernambuco
Maceio
Bahia
Matto Grosso
Cuyaba
MATTO GROSSO
Goyaz
Diamantina
Serra dos Aymores
São Francisco R.
Rio Preto
Campos
San Paulo
C. Frio
RIO DE JANEIRO
Santos
Concepcion
PARAGUAY
ASUNCION
Villa Rica
Salta
Tucuman
Corrientes
Cordova
Santa Fe
Parana
Salto
Pelotas
Porto Alegre
Rio Grande do Sul
Colonia
Rosario
BUENOS AIRES
La Plata
MONTEVIDEO
Plata R.
Tarija
Pilcomayo R.
Bermejo R.
Uruguay R.
Iguazu R.
Salado R.
Colorado R.
Rio Negro
CAPE VERDE IS.
ST. PAUL I.
FERNANDO NORONHA I.
TRINIDAD I. (To Brazil)
Longitude 120 110 100 90 80 70 60 50 40 30 20 10 0 West from Greenwich
E. Y. FARQUHAR DEL.
BRADLEY & POATES ENGR'S N.Y.

are so dense, and in many parts so swampy, that it is almost impossible for men to traverse them except on the rivers and numerous bayous. (The character of these forests is described in § 99.) India rubber and other gums, cabinet and dye woods, Brazil nuts, cocoanuts, vanilla and cacao beans, and Peruvian bark, sarsaparilla, and other medicines are among the useful products of these forests.

In the southwestern part of the grand division also there are forests which are quite dense; and in them peculiar kinds of cedar, pine, oak, and laurel are abundant.

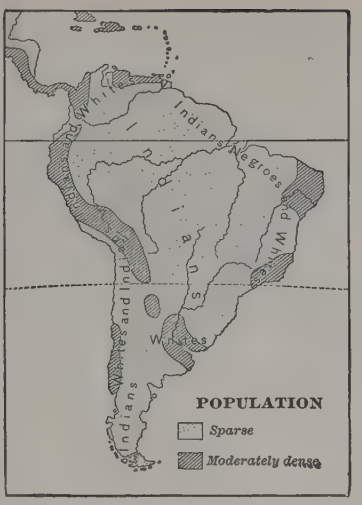
The plains of the Orinoco valley, called *llanos*, are treeless except for palms and mimosas which fringe the streams and crown the low hills. During the rainy season the region is covered with grasses, and affords fine pasturage, but in the dry season it is hardly more than a desert.

The plains, or *pampas*, extending southwestward from the Parana valley are like the Great Plains of the United States, and have very few trees. Many sheep and cattle graze there, but part of the region is divided into large farms.

Animals. No other region is so rich in animal life as South America.

In the silvas most of the animals are adapted for living on trees, and hence, with the exception of the tapir, jaguar, ant-eating bear, and boa constrictor, they are rather small. Among the smaller animals are monkeys, sloths, peccaries, and ant-eaters, many kinds of richly colored but generally songless birds, and countless insects and reptiles. In the rivers are found the whale-like manatee and the alligator.

The llama, alpaca, vicuña, and little chinchilla are found in the Andes and yield valuable wool. The llama is also used as a beast of burden. Among the mountains are found also deer, bears, the puma or panther, and the great condor.



On the pampas are the armadillo, the guanaco (a kind of llama), and the American ostrich, or rhea. Deer are also found both on the pampas and on the llanos, but by far the most numerous animals of these plains are cattle, sheep, and horses which were introduced by man.

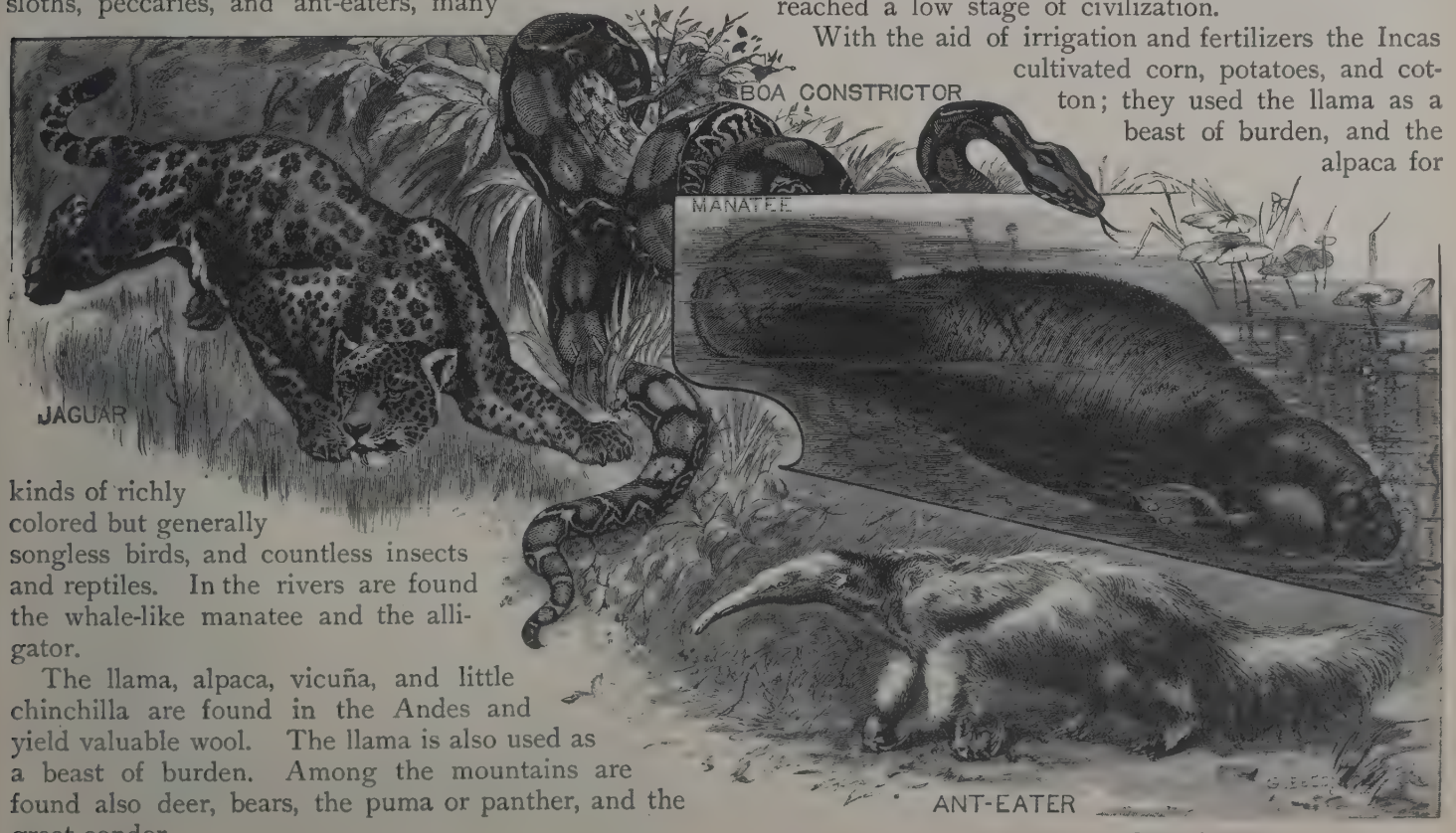
Supplemental Work. Read "What Mr. Darwin Saw"; also Bates's "Naturalist on the Amazon," pp. 174–179, 214–216.

MAN

Population and Countries. South America, as a whole, is more sparsely peopled than North America. It has less than one fifth the population it would have if the people of the world were evenly distributed over the land surface. The densest population is found near the coasts. The interior is very thinly peopled, chiefly by Indians.

When Spaniards discovered the New World there were probably more Indians in South America than in North America. Those of the lowland were savages, but the *Incas*, on the plateau of Bolivia, had nearly reached a low stage of civilization.

With the aid of irrigation and fertilizers the Incas cultivated corn, potatoes, and cotton; they used the llama as a beast of burden, and the alpaca for



Some Animals of South America.

Inca Ruins, Peru.

its wool, which they wove into cloth; they built roads and houses of stone; they made bronze, and knew how to work gold and silver, of which they made beautiful ornaments and utensils.

The Spaniards who followed Columbus to the north coast soon heard of the gold-working Incas, and quickly conquered them and occupied nearly the whole Andes highland as far east as the Orinoco. Spaniards also made settlements in the Plata valley.

Meanwhile explorers from Portugal conquered much of the east coast, which came to be called Brazil. Here the Portuguese made the first agricultural settlements in America, to which they brought thousands of negro slaves from Africa.

Thus most of eastern and central South America was claimed and settled by the Portuguese, while the Andes region and the lower part of the Plata basin were claimed and settled by Spaniards. On the northeast coast the English, French, and Dutch founded a few small settlements.

The Spaniards and Portuguese enslaved the Indians and forced them to work in the mines or on the plantations. Some of the white settlers married Indian women, and in the east many negroes and Indians also intermarried, so that now fully one third of the people of South America are of a mixed race. About one third are pure-blooded whites, and the rest are Indians and negroes.

Spain's South American colonies were so harshly ruled that they finally rebelled and became independent republics. In these countries the Spanish language is still spoken. About the same time the Portuguese colonists made Brazil independent of Portugal; this country is now a republic, in which the Portuguese language is still spoken.

Railroad zigzagging up the Andes.

Find on the map (p. 100) the republic of Brazil; it is the largest country of South America.

Find the small French, Dutch, and British colonies in the northeast.

Find and make a list of the nine Spanish republics. Note that all but two of them lie partly on the Andes highland.

The government of all the republics is something like that of the United States, but in all of them there have been frequent civil wars, or revolutions, and nearly all have fought with one another about their boundaries, some of which are not yet definitely settled. Partly because of these wars the industrial progress of the countries has been slow.

South American Indians.

Still slavery has been abolished and free settlers are now coming in thousands from Europe, especially in the southeastern regions. Some railroads have been built; the larger cities are provided with street cars and electric lights; and schools and colleges have been established.

Catholic missions were early founded among the Indians, and most of the people in South America profess the Catholic faith; but other religions are permitted by law in all the countries except Peru and Ecuador.

Industries and Products. The leading industries in South America are herding, agriculture, and mining. The chief pasture lands are the pampas in the south and the llanos in the north. The valleys of the Plata River system, the southeastern part of the Brazilian plateau, and the river valleys along the northern coast of the grand division are the chief agricultural regions. In the torrid zone, coffee,

sugar cane, cotton, cacao, cassava, and tobacco are grown; in the temperate zone, wheat, corn, barley, and flaxseed are the chief crops. The silvas of the Amazon valley yield a large part of the world's supply of India rubber, as well as much Peruvian bark. Gold, silver, copper, and tin are mined chiefly in the Andes region, but the principal mineral product is nitrate of soda, useful as a fertilizer and in making gunpowder. The most valuable commercial products of the grand division are coffee, rubber, wool, hides, and nitrate of soda.

GATHERING RUBBER.

The foreign trade is mainly with the United States and Europe. We get most of our coffee and rubber, much wool and sugar, and many hides from South America, to which we send flour and manufactured goods. Most of the South American imports come from Great Britain, Germany, and France, to which countries wool, beef, mutton, wheat, coffee, gold, silver, nitrates, and forest products are exported in return.

The most extensive railway system is in the southern part of South America. A railroad from the Plata to the Pacific is nearly completed. Throughout the central region the Amazon, with its tributaries, is the only commercial route. There are a number of comparatively short railroads from the Andes to the west and north coasts.

The United States of Brazil. Bound Brazil. What great river is in the northern part? Name the chief Brazilian tributaries of the Amazon. Trace the southern divide of the Amazon basin through Brazil. What rivers are south of this divide? Name and locate the capital; four cities north of the capital; two southwest.

Brazil is larger than the United States (without Alaska) and embraces nearly half the area and population of South America.

The whole northern part of the country lies in the Amazon valley, much of which is covered with dense and often swampy forests. In this region there are but few inhabitants, and these are chiefly Indians. Many of them are employed in the rubber industry. They collect the sap from the rubber trees, and harden it, in the smoke of burning palm nuts, into crude rubber. It is then sent down the great river to be shipped to Europe and the United States.

The great agricultural region of Brazil is a comparatively narrow strip along the east and southeast coasts. It lies partly in the narrow coast plain and river valleys and partly on the Brazilian plateau. Fully six sevenths of the population of the country live in this region. In the warmer northern part, negroes are numerous, and sugar cane, cotton, and tobacco are extensively cultivated, along with the chief food crops, corn, beans, and cassava. Farther south Europeans, chiefly Portuguese, Italians, and Germans, form the bulk of the population. On the uplands in the neighborhood of the tropic of Capricorn are the world's great coffee plantations. In the grassy uplands of the south cattle herding is the common industry, and dried beef and hides the chief products.

Much of the Brazilian portion of the Paraguay and Parana valleys is forest-covered and thinly peopled with Indians and half-breeds.

COFFEE HULLING.

CACAO TREES AND FRUIT.

Drying Coffee, Brazil.

Rio de Janeiro, the second city of South America in size, has one of the few fine harbors of the grand division, and ships much coffee, mostly to the United States. *São Paulo* is a trade center in the coffee region. Its port, *Santos*, ships more coffee than Rio de Janeiro, but chiefly to Europe.

Bahia and *Pernambuco* are the ports of the sugar and tobacco district. *Para* is the great rubber-shipping port, and *Maranhão* ships raw cotton. *Porto Alegre* exports dried beef and hides.

Argentina. Bound Argentina. How does it rank in size among South American countries? Describe its surface; its chief rivers. Name the capital; three cities of the interior.

Argentina, situated in latitude nearly corresponding to that of the United States, is the largest and most progressive of the Spanish republics. It has more railroads than any other South American country, and its population is rapidly increasing by immigration from Europe, especially from Italy.

The surface is a gradual slope from the lowland in the east to the high plateau near the base of the Andes. Mt. Aconcagua, near the western boundary, is the highest point of the Western Continent. The northeast is warm and moist, and is a forest wilderness inhabited by Indians.

South of Salado River most of the country is an open plain. The pampas proper embrace the eastern part of this region as far south as Colorado River. The soil of the pampas is fertile and the rainfall is sufficient for farming. The western part of the country is arid. The southern part is both dry and chilly, but it affords good pasturage for sheep.

Herding is the chief industry. Argentina has more sheep than any other country in the world, and is exceeded by few in the number of cattle. Great quantities of wool, hides, tallow, live stock, and meat, both fresh and cured, and other cattle products are exported. Wheat, corn, and flaxseed are also raised for export in the region surrounding Buenos Aires, and by the aid of irrigation grapes for wine and raisins are raised in the west and sugar cane in the northwest. Quebracho wood for tanning is obtained from the forest region and exported.

Buenos Aires, the largest city of South America, is the great seaport of Argentina and of nearly the whole Plata valley. It is a handsome city, with fine buildings, electric lights and street railways, and a large foreign population, chiefly Italian.

Rosario is a growing port. *Cordova* and *Tucuman* (in the sugar-growing region) are trade centers in the interior of the country.

Victoria Plaza, Buenos Aires, Argentina.

Uruguay. What countries border Uruguay? Describe its surface and drainage. Name and locate the capital.

Though the smallest republic in South America, Uruguay ranks fourth in the value of its foreign commerce. Its industries are similar to those of Argentina. *Montevideo*, the chief

commercial city of Uruguay, is about one third the size of Buenos Aires.

Paraguay. What countries border Paraguay? In what zones is it? By what rivers is it drained? What is the capital?

Cattle raising is an important industry in Paraguay, but the climate is too warm for sheep. Maté, or "Paraguay tea," is extensively cultivated, as also are corn, cassava, tobacco, and sugar cane. The women cultivate the crops, and the men gather the maté leaves and herd the cattle. Lumber and other forest products are exported to Europe. *Asuncion* is the chief trade center.

Supplemental Work. Read chapters 22–41, "Carpenter's Geographical Reader, South America."

VALPARAISO, CHILE.

Chile. Bound Chile. Describe its surface. Name and locate the capital. What important seaport is near it? Name a seaport farther south. Name two seaports in the north.

Chile is the third country of South America in importance. It occupies the narrow Pacific slope through more than half the length of the grand division. Its extent in latitude corresponds with that between southern Mexico and southern Alaska.

The surface resembles that of the Pacific coast region of North America. There is a lofty mountain chain on the east, a much lower range along the coast, and a low valley between the two. In the south the coast range of Chile forms an archipelago corresponding to that west of British Columbia and southern Alaska.

About one third of the people of Chile are white, mostly of Spanish descent. There are a few Indians in the south; but about two thirds of the people are half-breeds, who form the laboring class.

Because of differences in climate, the northern, central, and southern parts of Chile differ greatly in industries and products.

The hot northern section is a desert so dry that in some places water is brought in pipes from the Andes over one hundred miles distant. Here the mining of nitrate of soda for export is a great industry. The mineral is

PUNTA ARENAS, CHILE; SOUTHERNMOST TOWN OF THE WORLD.

obtained from old lake beds in the central valley, and forms the chief wealth of Chile. Much copper, and some silver and gold, are also mined in this section.

The central section has a moderate rainfall and temperature, and agriculture and herding are the chief industries. It is the food-producing region of Chile, and the home of five sixths of the population. Wheat, barley, grapes and other fruits are raised—in some quarters by the aid of irrigation. Coal is mined in the coast range south of Concepcion, and is exported.

Southern Chile is cold and has a very heavy rainfall. Lumbering is an important industry, though lumber is also imported into Chile from the United States. Coal and gold are mined in the south, near Punta Arenas.

Nitrate, or "Chile saltpeter," which forms the principal export, is sent chiefly to Europe, where it is manufactured into fertilizing compounds and sent to various parts of the world. It is also used in the manufacture of explosives. Copper, iodine, silver, wheat, leather, and hides are other Chilean exports.

Santiago, the largest city, is almost half a mile above the sea, and fifty miles inland. Like most of the larger cities of South America, it is much older than any city in the United States. Because of earthquakes, the houses are low and the streets wide, as in all the cities of the Andes. *Valparaiso*, the largest Pacific port of South America, is the chief importing point of Chile. Most of the minerals are shipped from *Iquique* and *Antofagasta*.

CENTRAL PLAZA, SANTIAGO, CHILE.

STREET IN LA PAZ, BOLIVIA.

Bolivia. What countries border Bolivia? In what respect does Bolivia differ from all other South American countries except Paraguay? Describe the surface. Name the capital; a city near Lake Titicaca.

In Bolivia the eastern range of the Andes is wide and exceedingly rugged. Several of its volcanic cones are nearly as high as Mt. Aconcagua. In these mountains are mined silver and tin, which are exported chiefly through the Chilean port of Antofagasta. Most of the imports come through the Peruvian port of Mollendo. Both ports are connected by rail with the plateau.

On the plateau, wheat, corn, barley, beans, and potatoes are raised, and cattle, sheep, and llamas are herded. Cinchona, cacao beans, and rubber are gathered from the forests of the east slopes and exported by way of the Madeira and Paraguay rivers.

La Paz is the largest town and the usual seat of government. The city is built in a deep gorge, through which Lake Titicaca once found an outlet into the Amazon system. *Sucre*, not far from the rich silver mines of Potosi, is the constitutional capital.

Supplemental Work. Read chapters 10–21, "Carpenter's Geographical Reader, South America."

Peru. Bound Peru. What great river rises in Peru? Describe the surface. Locate the capital. What city is in the south? What city lies on the plateau?

Peru lies on both sides of the Andes and presents great contrasts of climate. Few people live on the desert coast, because it is so dry, or in the inland forests, because they are so wet. Much sugar and cotton are grown, by the aid of irrigation, in the valleys of the west slope. On the plateau copper and silver are mined, the same kinds of food plants are raised as in Bolivia, and llamas, alpacas, and goats are herded. On the east slope, rubber, cacao beans, and cinchona are gathered. There are rich petroleum wells in the north, and extensive deposits of guano along the dry coast. The chief exports are sugar, rubber, cotton, copper ore, and wool. Three fourths of the people are of Indian descent.

Lima, the largest city, is six miles from its seaport *Callao* and about 600 feet above it. *Arequipa* is an important railroad town, more than one and a half miles above Mollendo, its seaport. *Cuzco*, the chief town of the plateau region, was the old capital of the Incas.

Ecuador. Bound Ecuador. Describe its surface. Name two volcanoes. What is the capital? the chief seaport?

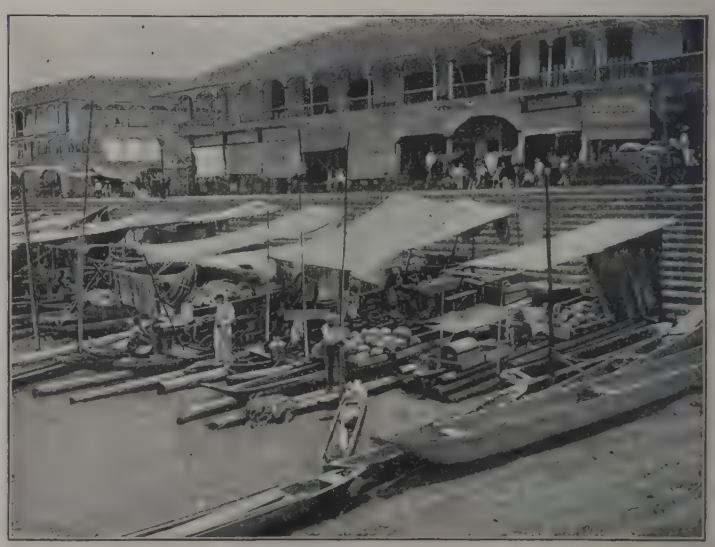
AREQUIPA AND VOLCANO MISTI, PERU.

Ecuador has but little commercial importance. It claims large areas to the east which have been occupied by Colombia and Peru. Cacao is cultivated on the Pacific slope and is the chief export.

Quito, the largest town, though nearly on the equator, is about two miles above the sea and has a delightful climate. *Guayaquil* is the principal port and commercial city.

The Galapagos group of volcanic islands, 700 miles out in the Pacific, belongs to Ecuador. They have few inhabitants.

Colombia. By what countries and waters is Colombia bordered? Trace the divides between the Pacific, Caribbean, and Atlantic slopes. Describe the surface. What is the capital? Name two other cities.



MARKET AND WATER FRONT, GUAYAQUIL, ECUADOR.

Most of the Colombian people live in the upper valleys of the Cauca and Magdalena rivers. On the hot lowlands cassava and bananas are cultivated; at more temperate elevations, corn, potatoes, tobacco, coffee, and cacao; and on the cool highlands, wheat, oats, potatoes, and beans. Herding is an important industry. Colombia is rich in minerals, and gold and silver are mined and exported. The famous mines of Muzo produce emeralds. Other exports include coffee, cattle, hides, tobacco, and bananas. *Bogota*, on the healthful highland, is the capital and largest city. *Medellin* is the center of the chief gold-mining region. *Barranquilla* is the great receiving and shipping point for Colombian trade.

NATIVE WOMEN OF BOGOTA, COLOMBIA.

Venezuela. Bound Venezuela. Describe its surface and drainage. What lagoon is in the northwest? What is the capital? Name two other cities.

Venezuela occupies most of the Orinoco River basin, including a large proportion of the llano region. Most of the people live on the high slopes of the Andes in the north. On the uplands excellent "Maracaibo" coffee and some cacao are grown for export. Hides are exported from the llanos, rubber and dyewoods from the southern forests, and gold from the southeast. *Caracas*, the largest city, is more than half a mile above the sea, and is connected by a railroad with its port, *La Guaira*, eight miles distant. *Valencia*, also on the uplands, and *Maracaibo*, the only large town on the unhealthful lowlands, are trade centers.

Guiana. What countries border Guiana? To what European nations does it belong? What is the chief town of each division?

Sugar raising and gold mining are the chief occupations in British and Dutch Guiana, and both of these articles are exported. There are comparatively few white settlers, but many negroes, Hindus, and Chinese laborers. French Guiana is used by France as a place to which criminals are banished.

The Falkland Islands, about 300 miles east of the Strait of Magellan, form a small British colony. The chief industry is sheep raising.

Supplemental Work. Read chapters 1–9 and 42–44, "Carpenter's Geographical Reader, South America."

CORRELATIONS AND COMPARISONS

Size. How does South America compare with North America in extent of longitude? When it is noon at Pernambuco what time is it at Guayaquil? in the Gulf of St. Lawrence? in Galveston Bay? on Vancouver Island? Compare the two grand divisions in extent of latitude. Use the scale of miles to compare the greatest widths and lengths of the two grand divisions.

Shape and Coast. Compare the general shape of South America with that of North America. Compare their coasts as to regularity of outline. Compare Lake Maracaibo with Hudson Bay; the estuaries of eastern South America with those of eastern North America; the indentations of the western coasts of the two Americas. Compare in number and size the continental islands (§ 20) of South and of North America. What is the largest island near the north coast of South America? What coast of South America most resembles the western coast of British America and southern Alaska?

Surface. Compare the western highlands of North and South America in general height; in extent of plateaus; in number and regularity of ranges. Compare the eastern highlands of the grand divisions in extent; in general height. Compare the lowlands of North and South America in position; in surface; in slopes.

Drainage. Compare the various river systems of the two Americas. Explain, where you can, the reasons for the differences and similarities you notice. Compare the lakes of South America with those of North America in number, size, and position. Name four rivers that are important to commerce.

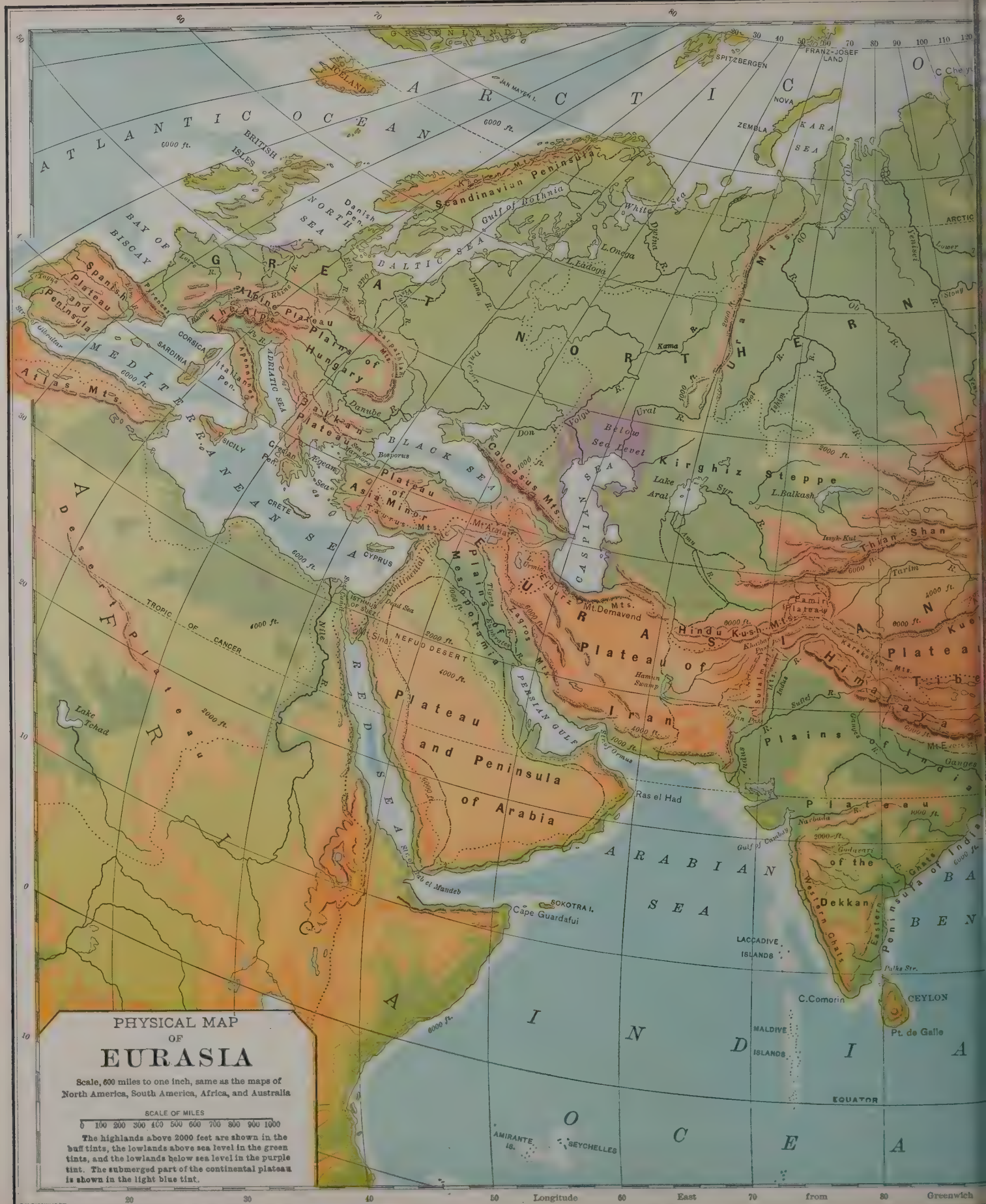
Climate. Compare the heat belts of South America and North America in number. Give some reasons why the eastern part of South America has more rainfall than the eastern part of North America. Write a short comparative description of the climates of the two grand divisions.

Life. Compare as to extent and cause the unproductive regions in the two Americas. Which has larger areas of dense forests? of open forests? Which of the South American grassy regions most resembles our Great Plains? How much of North America does the South American life region include? (map, p. 25.) Compare the life forms of the silvas with those of the Andes; of the llanos; of the pampas.

People. Compare the two Americas in density of population. Show how this density has been affected in each case by latitude; by elevation; by occupation. In what parts of North America does the black race chiefly live? in what parts of South America? Why? What other races are found in South America? Chiefly in what parts? How did the Indians formerly living in North America and South America compare in civilization?

Countries. Compare the forms of government in the two Americas. In which does a larger proportion of territory belong to European nations? Which contains the greater number of republics? Name the republics of South America. Compare Brazil with the United States in size; in government; in prevailing language. Compare Guiana with Belize. Compare the other South American countries with Mexico.

Industries. What agricultural products are important in both Americas? Which grow chiefly in South America? What minerals are mined in both? Which chiefly in South America? What important minerals are little mined in South America? Compare the forest products of the two grand divisions. Find industrial regions of North America to which the various countries of South America correspond in products. To what industrial section of the United States is there no corresponding country in South America? Describe the commerce between the South American countries and Europe and the United States. Compare the natural trade routes within South and North America; the artificial trade routes.


PHYSICAL MAP
OF
EURASIA
Scale, 600 miles to one inch, same as the maps of North America, South America, Africa, and Australia
SCALE OF MILES
0 100 200 300 400 500 600 700 800 900 1000
The highlands above 2000 feet are shown in the buff tints, the lowlands above sea level in the green tints, and the lowlands below sea level in the purple tint. The submerged part of the continental plateau is shown in the light blue tint.
ATLANTIC OCEAN
ARCTIC OCEAN
INDIAN OCEAN
GREENLAND
ICELAND
SPITZBERGEN
FRANZ-JOSEF LAND
NOVA ZEMBLA
KARA SEA
JAN MAYEN I.
BRITISH ISLES
NORTH SEA
Danish Pen.
Scandinavian Peninsula
Gulf of Bothnia
White Sea
DALTIC SEA
BAY OF BISCAY
Spanish Plateau and Peninsula
Pyrenees
Alps
Alpine Plateau
Plains of Hungary
Carpathian Mts.
Danube R.
Balkan Plateau
BLACK SEA
Caucasus Mts.
Asia Minor
Taurus Mts.
Mt. Ararat
CASPIAN SEA
Below Sea Level
Kirghiz Steppe
Lake Aral
L. Balkash
Ural Mts.
Ural R.
Volga R.
Don R.
Kama R.
Ob R.
Yenisei R.
Lena R.
Lake Onega
L. Ladoga
Dvina R.
Dnieper R.
Elbe R.
Rhine R.
Loire R.
Rhone R.
Garonne R.
Tagus R.
Strait of Gibraltar
Atlas Mts.
MEDITERRANEAN SEA
CORSICA
SARDINIA
Italian Pen.
Apennines
ADRIATIC SEA
SICILY
Sicilian Pen.
Aegean Sea
CRETE
CYPRUS
Sea of Marmora
Bosporus
Dardanelles
Desert Plateau
TROPIC OF CANCER
Lake Tchad
Nile R.
ISTHMUS OF SUEZ
Dead Sea
Mt. Sinai
NEFUD DESERT
RED SEA
Mesopotamian Plains
Euphrates R.
Tigris R.
Zagros Mts.
Mt. Demavend
Elburz Mts.
Plateau of Iran
PERSIAN GULF
Hamun Swamp
Gulf of Ormus
Plateau and Peninsula of Arabia
Ras el Had
Bab el Mandeb
SOKOTRA I.
Cape Guardafui
ARABIAN SEA
Hindu Kush Mts.
Afghan Plateau
Pamir Plateau
Thian Shan
Tarim R.
Lake Issyk-Kul
Himalaya Mts.
Tibet
Plateau
Karakoram Mts.
Sutlej R.
Indus R.
Plains of India
Ganges R.
Gulf of Cambay
Narbada R.
Gulf of Manar
Western Ghats
Eastern Ghats
Peninsula of India
Western Dekkan
LACCADIVE ISLANDS
Palke Str.
C. Comorin
CEYLON
Pt. de Galle
MALDIVE ISLANDS
AMIRANTE IS.
SEYCHELLES
EQUATOR
Longitude East from Greenwich
E. V. FARQUHAR DEL.

EURASIA

PHYSICAL FEATURES

Extent and Coast Features. What ocean is north of Eurasia? What ocean is west? What great sea and ocean are on the south? What ocean is east? From the star map, p. 8, name the grand division on the opposite side of the Arctic Ocean. What grand division is southwest of Eurasia? What continent is southeast?

On the map opposite connect with straight lines the most eastern, western, and southern points of the Eurasian mainland. What is the general shape of the grand division? Which side has the most regular, and which the most irregular, coast line? Make a list of the larger indentations of each side. Make a list of the peninsulas. Name a long island chain and an archipelago east of Eurasia; an island group west of it.

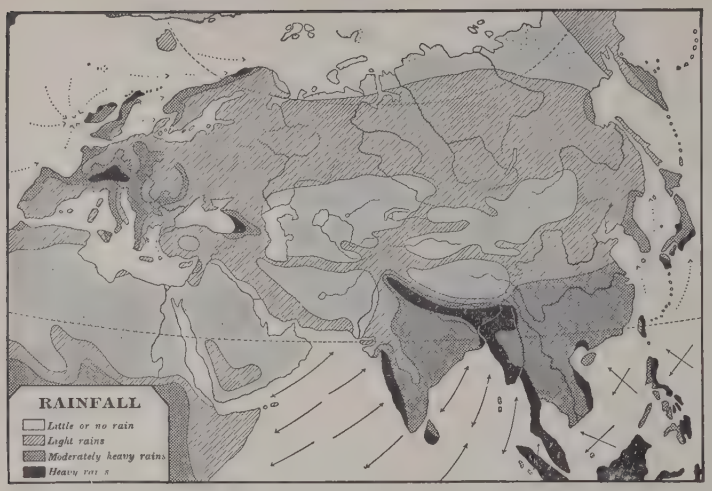
Eurasia contains more than a third of the land surface of the globe, and is by far the largest grand division. It extends southward nearly to the equator, and northward far into the frigid zone. It extends more than halfway round the earth in an east and west direction, so that when the days and nights are of equal length, a new day dawns on the shores of Bering Strait before the sun has set on the western coast of Spain.

The grand division is roughly triangular in shape. The southwestern side is made very irregular by great arms of the Mediterranean Sea and the Indian Ocean. The southeastern side is also irregular and is bordered by the Japanese Islands and the East Indies.

Surface. Review the lesson on highlands and lowlands (p. 10). In what part of Eurasia are nearly all the highlands? Name four large plateaus of the Eurasian highland; five smaller plateaus. What part of Eurasia is an almost continuous lowland plain? By what mountain range is it divided? Name three lowland plains on the Pacific slopes; two on the Indian Ocean slope. Name a detached plateau of this slope.

The Highlands. The great Eurasian highland is cut entirely through by the outlet from the Black Sea, but extends through southern Europe as a broken and narrower highland to the Spanish peninsula. In central Asia this vast highland is 2500 miles wide. There is no continuous mountain chain traversing the highland, as in America, but from Bering Strait to the Strait of Gibraltar there is a broken succession of mountain ranges. Between them are broad, dry plateaus which differ greatly in elevation. The small, rugged Pamir plateau and the extensive plateau of Tibet are about three miles in elevation, while the plateaus to the northeast and southwest of them are less than one third as high. The mountains rise from one to three miles above the plateaus, and among them are the highest ranges in the world.

Ranges. The three ranges which extend eastward from the Pamir region near the borders of the plateaus of Tibet and Mongolia are the loftiest mountains in the world. Name them. The upper third of their slopes is always covered with snow, from



which glaciers extend much lower. Mt. Everest, in the Himalayas, is the highest measured peak ($5\frac{1}{2}$ miles), but there are many peaks nearly as high in each of these ranges.

What three ranges are northeast of the Thian Shan? These ranges are lower than those nearer the Pamir plateau, but the snow-clad peaks of the Altai range are three miles high.

What three ranges form the northern border of the highland west of Pamir plateau? the eastern and southern border? The Hindu Kush is a snow-capped range about four miles high. The others are lower, but the upper valleys of the Caucasus are filled with glaciers.

Name four ranges in southern Europe. Of these, the Alps and the Pyrenees are snow-clad, and have peaks over two miles high.

What two mountain ranges are in the northern lowland? These ranges are scarcely a mile high. The Urals are a gradual swell in the great plain. The Kiolen Mountains slope gently to the east, but their abrupt western slope forms the bold, rocky coast of the Scandinavian peninsula. Great glaciers descend from it to the sea.

Earthquakes are not uncommon throughout the Eurasian highland, and they indicate that its upheaval may still be in progress. There are comparatively few active volcanoes on the mainland of Eurasia, and these are widely separated. About 150 active volcanoes, however, occur on the islands which rise from the continental shelf east and southeast of Asia. This is the most active volcanic region in the world. It is shaken by earthquakes almost constantly.

The Lowlands. Most of northern Eurasia is lowland with an elevation of less than 500 feet, and around the Caspian Sea it is actually below sea level. In general its flat surface is broken only by the bluffs which border the streams.

The plains east and south of the great highlands were once the bottom of shallow seas, which were nearly filled with rock waste washed from the bordering mountains, and then slightly upheaved, forming fertile lowlands.

Climate. Review the sections on the heat belts and winds and rainfall (§§ 79–93). Where are the largest regions of heavy or moderately heavy rainfall in Eurasia? Where are the regions of light rains or no rain? What is peculiar about the winds of southern and southeastern Asia? (§ 87.) What effect have these winds and the highlands upon the rainfall of this region? upon the rainfall of central and southwestern Asia? What are the causes of the moderately heavy and the light rainfall in western and northern Eurasia?

With the exception of the southern and the western parts, Eurasia is characterized by excessive temperature changes during the year. The coldest winters in the world occur in northeastern Asia, and nearly the hottest summers in southwestern Asia. Even in the hot belt there is a chilly season when the dry winds blow southward from the highlands. In the west the summer heat and the winter cold are tempered by the prevailing winds from the Atlantic.

In the south and southeast the monsoon winds (§ 87) blowing from the sea in summer yield copious rainfall on the seaward slopes, while little rain falls at other seasons, when the winds blow seaward. The sea winds lose most of their moisture on the seaward slopes of the ranges bordering the great highlands, so that the plateaus and lowlands behind these ranges receive little or no rain and are therefore deserts. The westerly winds, with their cyclonic storms (§ 86), yield ample rainfall at nearly all seasons over western and central Europe, but have little moisture left when they reach northern Asia.

Drainage. From the Khinghan Mountains trace the dotted line around a great central region of Eurasia whose drainage does not reach the ocean. Locate this region on the rainfall map, and tell why it is a region of "interior drainage." What becomes of its streams? (§ 47.) Is the water of these lakes fresh or salt? Why? What is the largest sheet of water in this region? What two large tributaries has it? What other part of Eurasia sends no drainage to the sea? What three large rivers of Eurasia flow to the Arctic Ocean? What four flow to the Pacific Ocean? Name four that flow to the Indian Ocean. Name three that flow to the Atlantic Ocean, through the Black Sea. Do the Eurasian rivers flowing to the Arctic and those flowing to the Indian Ocean have their sources near together? What separates them?

As so large a part of Eurasia receives light rainfall, none of its streams equals the great rivers of America. On the moist southeast slope the river basins

THE ALPS.

are comparatively small, while the large basins of the north receive only a light rainfall. Thus the Yangtze, the longest river of Eurasia, is not much larger than the St. Lawrence in volume, and the four large rivers of the north are a little smaller. Because of greater rainfall the streams in the southeast and in the west are larger in proportion to their length than those in the north and in the southwest.

The Caspian Sea is about five times as large as Lake Superior, and is the largest lake in the world. Evaporation is so rapid that its surface lies about eighty-five feet below sea level, though it receives the Ural River and the great Volga. The land barrier which separates the Black Sea from the Caspian, north of the Caucasus, is so low that if the Black Sea were to rise ninety feet it would overflow into the Caspian. Lakes Aral and Balkash, like the Caspian Sea, have no outlets; because of the rapid evaporation, they do not rise high enough to overflow their basins.

Lake Baikal, in the Yenisei basin, is about twice the size of Lake Ontario, and is the largest fresh-water lake in Eurasia. There are many small fresh-water lakes and extensive swamps on the low, flat northern plain, particularly west of the Ural Mountains, where the surface is covered with the drift of the old Scandinavian glacier (§ 60). Ladoga and Onega are the largest of these lakes.

Supplemental Work. Draw a map of Eurasia, naming the chief indentations and peninsulas, the chief mountains and rivers, and indicating the chief divides. Model Eurasia. Write a comparison of the climates of central, southern, and western Eurasia.

VEGETATION AND ANIMALS

Review the lesson on distribution of life (§§ 98–104). Where are the forest regions of Eurasia? What part is an open grassy region or a desert? What two great life regions occupy most of Eurasia? What physical features form the barrier between these regions? Review the lessons on the Oriental and Eurasian life regions (§§ 108, 109), and mention some of the characteristic plants and animals of each region.

Northern and Western Eurasia. The Arctic coast of Eurasia, like that of America, is bordered by tundras (§ 101), in which mosses and lichens form the principal vegetation. The broad belt of forests south of the tundras is composed chiefly of cone-bearing evergreen trees, such as spruce, pines, and firs, but is broken by many great treeless areas and swamps covered with birch and willow thickets. In the southwestern part of this belt are extensive forests of oak, beech, and other hardwood trees. Many years ago this forest belt extended westward to the Atlantic, but it has long since been cleared away from the fertile lowlands in that region.

The principal large animals of the forest region are much the same as those of the North American region in the same latitudes — the reindeer, elk, bear, wolf, and many small fur-bearing animals, such as ermines, martens, sables, squirrels, and foxes.

Central and Southwestern Eurasia. In the drier region south of the forest belt, both in the lowlands and on the plateaus, are vast prairies, or *steppes*, which farther south merge into deserts. These steppes and deserts form the characteristic feature of central Eurasia from the Mediterranean nearly to the Pacific.

The mountain sides in this region are moister than the lower lands, and there forests occur. Oaks, beeches, chestnuts, cedars, laurels, and myrtles are common on the lower slopes, while firs, pines, and other trees yielding resinous gums grow at greater elevations.

This is the home of the horse, cow, camel, sheep, goat, and hog, and great numbers of all these animals are raised here. Among the wild animals are many kinds of sheep and goats, antelopes and gazelles, wild boars, camels, asses, and oxen, including hairy yaks and hairless buffaloes. There are several kinds of bears among the mountains, and the tiger and the leopard wander northward as far as to the Amur River, and to the southern shores of the Caspian Sea.

The great deserts are devoid of surface water for hundreds of miles. In places, however, the ground water comes near enough to the surface to supply the roots of plants. An *oasis* of vegetation is thus formed in the midst of the barren desert. Some oases are miles in extent and contain springs and running streams, but others are small and afford water to the thirsty traveler only by means of wells.

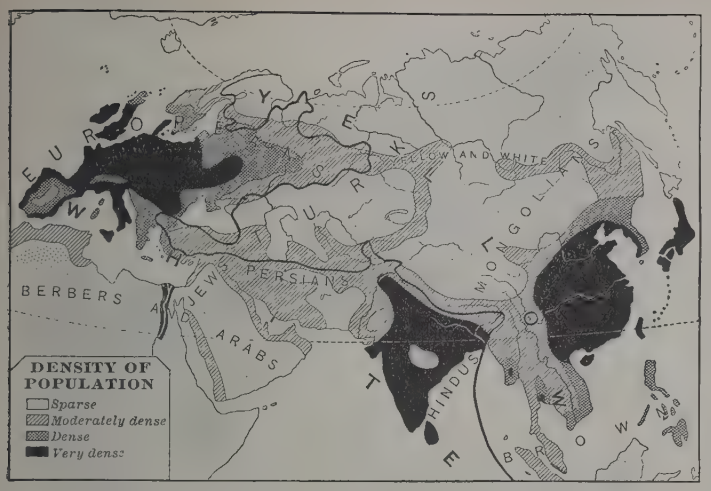
Because of windstorms some parts of almost all deserts are bare and stony, being swept nearly clean of the surface rock waste, while other parts are deeply covered with shifting sand dunes.

Southeastern Eurasia. In southeastern Asia the forests have been much reduced by the crowded population, and are now confined to tracts least favorable to cultivation — as marshy lowlands or rough hilly districts. These forests are much denser and more luxuriant than those of the north. In the lowlands are many kinds of palms, bamboos, and trees yielding India rubber, spices, and dyewoods, together with pitcher plants and hundreds of vines growing between the trees, matting them together and forming with the rank undergrowth an impenetrable *jungle*.

Some Animals of Eurasia.

Here the rhinoceros and the wild boar make their homes. Tigers and leopards also live in the jungle. These fierce animals wander out into the cultivated lands at night and kill not only hundreds of people every year, but thousands of sheep and cattle as well. Many people, also, are killed by the poisonous bite of the cobra, a snake which abounds in India.

On the higher lands the forests are composed of many fine timber trees, of which the toon, sal, teak, satinwood, and sandalwood are the most valuable. In these forests are found elephants, bears, monkeys, and wild cattle.



MAN

In what parts of Eurasia is the population dense or very dense? Why are northern, central, and southwestern Asia not so well adapted for a dense population? What three races live in Eurasia? In what parts do the whites live chiefly? Locate the homes of five peoples of the white race. What people of the yellow race live in a region extending westward between the Europeans and other Aryan peoples (Persians and Hindus)? Locate the home of another people of the yellow race. Review the lesson on man's manner of life, §§ 120–122.

Eurasia contains about four fifths of the population of the world and is the most densely peopled of the grand divisions.

More than two thirds of the people live in the three regions of very dense population, and have reached the stage of civilization. It is only in the dense forests of the islands and mainland in the extreme southeast and along the bleak Arctic shores that savage tribes are found. Most of the natives in the sparsely settled parts of the northern lowland are far advanced through the stage of barbarism.

Unlike America, Eurasia has been the home of civilized man ever since the beginning of history. People were already civilized more than 4000 years ago in the plains of Mesopotamia, India, and China, and in the fertile valley of the Nile in northeastern Africa. This early civilization improved so slowly that many of the people of these regions are not yet highly civilized.

More than 3000 years ago civilization reached the Grecian peninsula, and thence it gradually spread through Europe. This western civilization improved so greatly that the Aryans of Europe became more highly civilized than the other people of Eurasia. As they advanced in civilization their wants became greater, and they sought new and better commercial routes by which their wants might be supplied.

In this search their ships sailed completely around the world, and they discovered southern Africa, the unknown continents of America and Australia, and the islands of the sea. They planted colonies in these and other lands, thus carrying their civilization over the globe. This civilization has constantly advanced until now the European Aryans and their descendants in the new lands which they have settled are by far the most enlightened people in the world.

TOPICS ON EURASIA

I. Northern Plain. Coast. Surface. Climate. Drainage. Life: vegetable; animal. Man: density; races; civilization.

II. Eastern and Southern Plains. Names. Formation. Climate. Drainage. Life: vegetable; animal. Man: density; races; history; civilization.

III. Eastern Highlands. Plateaus. Mountains. Climate. Life.

IV. Western Highlands. Plateaus. Mountains. Climate. Life.

V. Islands. Western. Eastern. Chief groups. Volcanoes.

EUROPE

Before studying the following lesson on People and Countries take the Map Exercise on Europe at the top of page 115.

PEOPLE AND COUNTRIES

People. Europe, though little larger than the United States, contains five times as many inhabitants. Compare the regions of dense and very dense population with the corresponding regions in the United States (map, p. 49). Where is the population of Europe sparse?

Countries. Europe is composed of twenty or more independent countries, in nearly every one of which the people differ from those of the others in language and customs.

This variety in language and customs is one of the most striking differences between Europe and the United States. The difference arises mainly from the different ways in which the two regions were civilized. The

EUROPE
Scale 330 miles to one inch, same as the maps of the United States and Canada.
SCALE OF MILES
0 100 200 300 400 500
ARCTIC OCEAN
ATLANTIC OCEAN
NORTH SEA
BALTIC SEA
BLACK SEA
CASPIAN SEA
MEDITERRANEAN SEA
BAY OF BISCAY
ENGLISH CHANNEL
GULF OF BOTHNIA
GULF OF FINLAND
SEA OF AZOF
WHITE SEA
KARA SEA
ICELAND
BRITISH ISLES
SCANDINAVIA
RUSSIA
GERMANY
FRANCE
SPAIN
AUSTRIA-HUNGARY
TURKEY
GREECE
ITALY
AFRICA
ASIA
Longitude West 0 Longitude 10 East from 20 Greenwich
BRADLEY & PYATT'S FUSR S.N.Y.

THE RUINS OF THE COLISEUM, IN ROME.

Map Exercise on Europe. The Ural and Caucasus mountains and the Caspian and Black seas are conveniently regarded as the physical boundaries between Europe and Asia. What is the most northern point of the European mainland? What point on the American mainland is in about the same latitude? What point on the eastern coast of America is in about the same latitude as the most southern point of the European mainland? How does Europe compare with the United States in size?

From the Ural Mountains trace the divide between the northern and southern slopes of Europe. In what physical division does the eastern half of this divide lie? the western half? Into what arms of the sea is the northern slope drained? Name two rivers that flow into the Baltic sea; two that flow into the North Sea; one that flows into the Bay of Biscay. Into what seas is the southern slope drained? Trace in Europe the divide of the Caspian basin; of the Black Sea basin. Name the two largest rivers of the Caspian basin; the three largest of the Black Sea basin. What river flows into the Adriatic? What two flow into the western part of the Mediterranean?

Through what part of Europe does the great Eurasian highland extend? What mountains and what plains are in the Danube basin? What mountains form the southern divide of this basin? What mountains extend south into the Grecian peninsula? What mountains traverse the Italian peninsula? What mountains are between the Alps and the Pyrenees? Name two ranges of the Spanish plateau. What mountains are in northwestern Europe? What group of large islands is near the west coast? By what is Great Britain separated from the mainland?

Supplemental Work. Sketch Europe, locating its chief mountain ranges, divides, rivers, seas, gulfs, bays, and islands. Model Europe.

United States became civilized through being overrun during the last 300 years by a vast number of highly civilized, white foreigners, most of whom used the English language. They largely replaced the native tribes. In Europe, on the contrary, it was the natives themselves who became civilized, and who, as the centuries passed, slowly developed the higher civilization that was carried to America. Among the peoples of Europe, as they gradually advanced in civilization, the native languages and customs were retained and improved.

The languages and customs of neighboring tribes were often somewhat similar but were quite different from those in distant regions, for few people traveled far from home in those days. It was only when some tribe conquered and settled among another people that distant tribes mixed together. In such cases both of the old languages gradually disappeared, while from their blending a new language came to be used by the descendants of the mixed people.

Southwestern Europe. Name five countries of the European mainland which have a seacoast and which lie west of the Rhine and the Adriatic Sea. These are called Latin countries because the languages spoken in them are derived from the Latin language used by the ancient Romans.

The Latins were a people of Italy who early received civilization from the Grecian peninsula. They built Rome, which 2000 years ago was the largest and most magnificent city of the world. They conquered and taught the arts of civilization to all the tribes of Europe southwest of the Rhine, and added that region to the great Roman Empire.

The Christian religion was early brought to Rome, which is still the residence of the Pope, the head of the Catholic Church; and this form of religion still prevails in all the Latin countries.

Central Europe. Trace a straight line from southeastern Italy to North Cape. What seven countries lie wholly or mostly between this line and the Latin countries? Most of the languages in this region, as well as the English language, which is used in the British Isles, resemble the old German language, and so these countries are often called Germanic or Teutonic countries.

The Teutonic tribes remained barbarians long after the Romans had conquered the Latin countries, for the Romans could not subdue the Teutons, but were at last conquered by them. Then the barbarians overran the civilized Latin countries, but in doing so learned civilization from the conquered people. Two Teutonic tribes, the Angles and the Saxons, whose home was near the shores of the North Sea, crossed to Great Britain and settled in the southern part, which came to be called

VIKING SHIP FOUND BURIED IN NORWAY.

Angle-land or England, while the blended language of these settlers became Anglo-Saxon or early English. The tribes of the Scandinavian and Danish peninsulas were the fearless sea rovers called Northmen and Vikings.

Christianity was spread throughout central Europe by priests of the Catholic Church, but now the Protestant faith prevails in all the Germanic countries, except Austria, which is still mainly Catholic.

Eastern Europe. What great country occupies most of eastern Europe? What six countries occupy the southeastern part? The eastern part of Europe is called

Slavonic Europe, because nearly all of the languages used show a blending with the language used by the Slavs, a great tribe that once lived northeast of the Carpathian Mountains.

Most of eastern Europe received civilization through central Europe, and was thus the last part of the grand division to become civilized. It is not yet so highly civilized as the western half of Europe. By far the greater part of the population are Aryans, but there are many people of the Turkish branch of the yellow race in all these countries.

Throughout most of eastern Europe the Greek form of the Christian religion is the prevailing faith, but in Turkey and Bulgaria very many of the people are Mohammedans.

Government. While the governments of most American countries are republics in form, all but two of the governments in Europe are monarchies. The two exceptions are France and Switzerland. These are republics. In each the chief ruler is elected from among the people to hold office for a definite length of time. In the monarchies the ruler is an aristocrat or noble, is generally a relative of a previous ruler, and holds office for life. The European monarchies are all limited (§ 124) in greater or less degree.

Great Britain, Germany, France, Russia, Austria-Hungary, and Italy are the strongest and most populous nations of Europe, and are often called the "Six Great Powers."

INDUSTRIES AND PRODUCTS

Though all the great industries are pursued in Europe, by far the largest part of the working population is engaged in agriculture, manufacturing, and commerce.

Agriculture alone affords occupation to more than half the people. It is pursued in nearly all parts of Europe except in the extreme north and on the more rugged slopes.

In eastern Europe the light rains fall mostly during the summer, so that crops grow well; in the south, where the summers are dry, irrigation is practiced; and many of the steep hillsides in all regions are terraced and planted. More than twice as much land is cultivated as in the United States, and a much larger quantity of food is raised.

The great agricultural regions are (1) the central lowland from the Atlantic through southern Russia, and (2) the valleys of the Danube, Po, Rhone, and the streams of the Spanish peninsula. The central region, including the plains of Hungary, yields three fourths of the rye, oats, wheat, barley, and potatoes, and is the chief food-producing belt. Other crops of this belt are sugar beets, beans, cabbages, and the fibers flax and hemp. In southern Europe large quantities of beans and much grain are raised, but the characteristic crop is the grape, for this is the world's greatest wine- and raisin-producing region. Other important crops are olives, oranges, lemons, figs, almonds, and chestnuts. Mulberry trees are also cultivated to afford food for silkworms, which are extensively reared.

Herding. There are four times as many sheep raised in Europe as in the United States; twice as many cattle, and about as many hogs; but only four of the countries of Europe produce more meat than the people consume.

The pastures and dairy farms are mostly in the central food belt, but some cattle and very many sheep and goats are pastured in the highland regions. Hogs are raised mostly in the forests, where they fatten on acorns, beechnuts, and other nuts.

Fishing. The product of the fishing industry is more than twice as great as in the United States. The most valuable fisheries are those of the northwest coast, which yield herring, cod, mackerel, and oysters. The southwestern coast waters afford sardines, anchovies, and tunny fish. The seas and rivers in the southeast yield sturgeon, from the roe of which caviare is made.

The richest coral fisheries of the world are in the western half of the Mediterranean; and the most extensive sponge fisheries are in the eastern half of this sea.

Lumbering. The forests of Europe, though much more extensive than those of the United States, yield less than half as much lumber.

The chief lumber regions are northern Russia, the Scandinavian peninsula, and the wooded slopes of the Carpathian Mountains, but most of the highland regions in southern Europe are well wooded.

In nearly all the countries the forests belong to the ruler and to a few of the noble families, and are carefully preserved from destruction. Only a certain amount of timber may be cut each year, and young trees are planted to replace those that are cut down. The dead timber and fagots are gathered for fuel, and thus many of these cultivated forests have come to resemble great open groves, without underbrush and with the trees planted in rows.

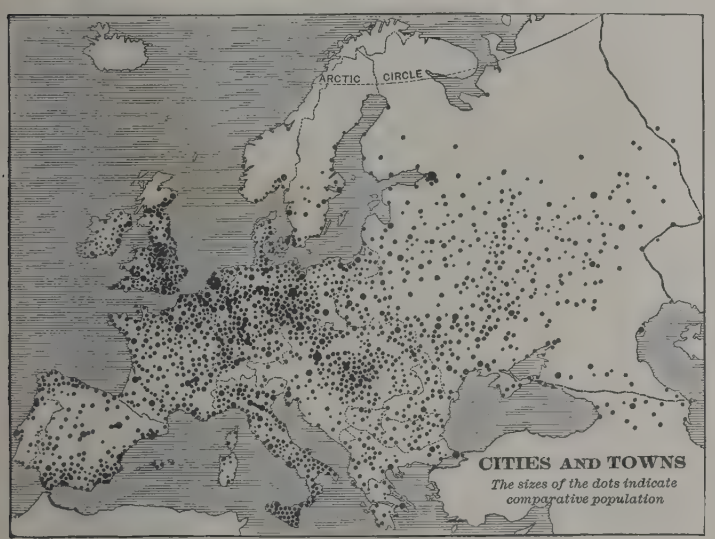
Mining. All the useful minerals are found in Europe, and mining is an active industry in many of the countries, the mineral output being almost twice as great as that of the United States.

Coal and iron ore are obtained in nearly every country of Europe. Great Britain furnishes about half of

the coal, and much of the iron ore, and both minerals are mined extensively in the region north of the Alps and the Carpathian Mountains. Iron ore is also obtained from the Spanish and Scandinavian plateaus and from the southern Urals.

The Eurasian highland furnishes a large part of the world's supply of copper, zinc, and quicksilver, and some tin, lead, silver, and gold. Salt is obtained in many localities, and petroleum in great quantities along the southern base of the Caucasus, and in smaller quantities along the northeastern foot of the Carpathian Mountains.

Manufacturing. From the map below, tell what parts of Europe contain the most cities and towns (§ 143). The great manufacturing region includes the island of



Great Britain and the countries bordering the English Channel and the North and Baltic seas on the south. This region yields most of the coal and iron; in it modern machinery is extensively employed, and about two thirds of the manufactures are produced.

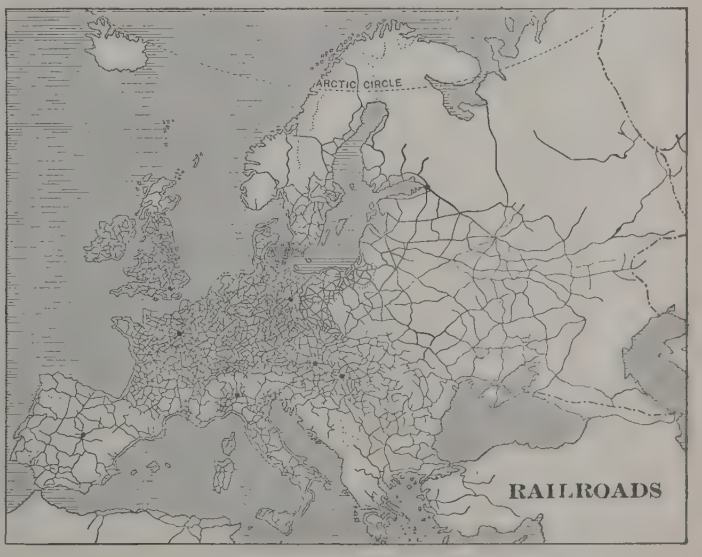
Except in this region, however, manufacturing is carried on chiefly by hand in Europe, so that though there are seven times as many workers, the total value of the manufactured product is only twice as great as in the United States.

The chief manufactures are (1) food products, including butter and cheese, olive oil, and beet sugar, besides wine and beer; (2) cloth; (3) clothing; (4) iron and steel, including machinery, ships, and other iron articles of all kinds; and (5) leather. Besides these, glass, porcelain, pottery, jewelry, woodenware, and nearly every other kind of article used by civilized man, are manufactured in Europe.

Commerce. The commerce of Europe is much greater than that of the United States, and foreign commerce forms a much larger share of the total than it does in our country. Most of the European countries are very small in comparison with the United States, and are much more thickly peopled, so that they do not produce a sufficient variety or a sufficient quantity of articles for home consumption, and hence have to obtain many things from neighboring countries or from other grand divisions.

The chief imports from other grand divisions are such foods as tea, coffee, wheat, and meat, and the raw fibers cotton, wool, and silk. The fibers, when manufactured into cloth, form the chief exports to other grand divisions. Machinery, tools, cutlery, and other iron and steel goods are also exported.

Water routes are much more extensively used in Europe than in the United States. Nearly all the rivers have been rendered navigable and are connected by canals with neighboring systems. The Caspian and the Black seas have been thus connected with the Baltic, North, and White seas, and the Mediterranean with the Bay of Biscay and the English Channel. The shipping of Europe is four times as great as that of the United States, but its railroad system is not quite so extensive as that of our country.



Compare the distribution of railroads in Europe with the distribution of cities. Compare it with the distribution of railroads in the United States (p. 53).

Wealth and Earnings. With five times as many people, Europe has only about three times as much wealth as the United States; and the average daily earnings of the people are much less than in our country. This is largely owing to the fact that labor-saving machinery is less generally used in Europe than it is in the United States.

Supplemental Work. Make illustrations showing what part of the people of Europe practice agriculture; how the amount of cultivated land in Europe compares with that in the United States; how the cattle of the two compare; the fishing product; the extent of forests, and lumber product; the mineral output; the number of manufacturing hands, and the amount of the product; the shipping and railroads; the population and wealth.

CENTRAL EUROPE

United Kingdom of Great Britain and Ireland. The United Kingdom includes all the British Isles. By what waters are they surrounded? Name the largest island; the next in size; the waters between them. Name three groups north of Great Britain; one group south.

Name three great indentations of the east coast of Great Britain; four of the west coast; three on the west coast of Ireland. In what part of the British Isles are there highlands? Name the chief ranges.

What three countries are included in the island of Great Britain? Describe the surface of each. Name four rivers of England; two of Scotland; three of Ireland.

The Grampian "Highlands," the Cheviot and Pennine hills, and the Cambrian Mountains make the northern, central, and southwestern parts of Great Britain uneven and in some parts quite rugged. A large part of England, however, and most of Ireland are smooth and level.

The climate is mild, moist, and equable (p. 110), and fogs are frequent.

The British Isles as a whole are densely peopled, and England is one of the most densely peopled countries in the world.

Nearly half the land is under crops, and much of the rest is suitable for pasturage. Cattle and sheep are raised, Great Britain producing more mutton and wool than any other country in Europe except Russia. Grain, hay, vegetables, fruits, butter, cheese, and beef are produced, but only a small part of the people are engaged in agricultural and pastoral pursuits, and food of all kinds has to be imported in large quantities.

Manufacturing is the chief industry, especially in England, and commerce and mining are also very active. In the value of manufactured products, Great Britain exceeds all other countries except the United States, and in the making of cotton and woolen cloth she greatly exceeds all other countries in the world. The coal and iron mines of the British Isles are chiefly in northern and southwestern England and in southern Wales. The coal fields yield about two thirds as much coal as those of the United States, and the iron and steel manufactures exceed those of any other country except the United States. Lead, tin, and copper ores are also mined, but not abundantly.

The manufacturing greatness of Great Britain depends chiefly upon her great supply of coal and iron ore. Raw materials — cotton, wool, hides, and iron ore — are imported in large quantities from beyond sea. The importing of raw materials and food supplies, and the exporting of manufactured goods and coal, give rise to a foreign commerce nearly twice as great as that of any other country. This, besides much of the foreign trade of other countries, is carried on in British vessels; for Great Britain owns nearly half the shipping of the world.

Ireland is admirably adapted for agriculture, but much of the land is owned by people who live in England, and the laws have been unfavorable to the tenants. Still, about half of the people are engaged in farming, and they raise a surplus of grain, potatoes, butter, and eggs to send to Great Britain. In the northeastern part of the island large crops of flax are raised, from which the famous Irish linens have long been manufactured. Much wool is also produced, and made into cloth chiefly by the aid of water power.

THAMES EMBANKMENT, LONDON.

In wealth the United Kingdom surpasses every other country except the United States.

The British have been the most successful colonizers in the world. During the last 300 years they have planted colonies in every one of the grand divisions, and in many islands of the sea, so that now the British possessions include about one fifth of the land surface and one quarter of the people of the earth. Canada is their chief American possession. Other important possessions are India, Australia, and southern Africa. The United Kingdom and the colonial possessions form the British Empire.

The supreme power of the empire is the law-making branch of the government, which is called *Parliament*. It is something like our Congress, and consists of a House of Lords composed chiefly of the nobles, and a House of Commons composed of members elected by the people who live in the British Isles.

The king is called the head of the nation, but the executive department really consists of a prime minister and his associate ministers, who hold office during the pleasure of the House of Commons.

London, the capital, is the largest city in the world. It contains nearly as many people as New York city and Philadelphia together. It is the world's greatest commercial and financial center. It lies on both banks of the Thames, which is crossed by many bridges. The harbor, formed by the broad estuary of the river, is fifty miles long. The trade is mostly with Asia and the European mainland, and the imports greatly exceed the exports. *Glasgow*, the second city of the kingdom in size, is the center of Scottish trade and manufacture. The chief manufactures are steel ships, machinery, cotton and linen cloth, carpets, and pottery. *Liverpool*, the third city, is an active commercial center, and the great seaport for the manufacturing region of England. The trade is largely with America, Australia, and South Africa, the exports being chiefly cloth and hardware, and the imports cotton, wool, and food stuffs.

CONWAY CASTLE, WALES.

The region across England from Liverpool is an almost continuous succession of great manufacturing cities. Among them the largest is *Manchester*, the world's greatest cotton-manufacturing center; *Leeds*, noted for its woolen

JAUNTING CAR, IRELAND.

HIGHLAND COTTAGE, SCOTLAND.

STREET IN A GERMAN VILLAGE.

manufactures; and *Birmingham* and *Sheffield*, noted for machinery, cutlery, and hardware. *Hull* is the important seaport for the trade of this region with the European mainland. *Newcastle*, on the Tyne, and *Cardiff* are great shipbuilding and iron-manufacturing centers and coal-exporting points. *Edinburgh*, the seat of the local government of Scotland, and *Dublin*, of Ireland, are important cities. *Belfast* is the center of the Irish linen manufacture and shipbuilding.

Supplemental Work. Read chapters 1–9, "Carpenter's Geographical Reader, Europe." Begin a scrapbook of clippings and pictures about Europe.

PEASANT'S HOME, GERMANY.

The German Empire. What seas and countries border the German Empire? (p. 123.) Describe its surface. Name five rivers of its northern slope; one of its southeastern slope. Locate its chief mountains. Compare it with the British Isles in area and population (p. 153); with Texas. What part of the United States is in the same latitude?

The southern half of the German Empire lies on the Alpine plateau, from which rise several groups of low and much worn volcanic mountains. The sandy lowlands of the north are covered with the drift of the old Scandinavian glacier and the wind-blown sands of the Baltic Sea.

The Rhine, the great river of Germany, has cut through the plateau a narrow, picturesque valley, whose steep side slopes are terraced for vineyards and are crowned with the ruins of old castles. In its lower course the river has a broad flood plain, which is covered with meadows and fertile fields.

About nine tenths of the land in Germany is productive. Large areas are devoted to the cultivation of grain, and the sandy soil in other places yields an abundance of potatoes and sugar beets. Much of the southern highland is covered with forests, and the river valleys are noted for their vineyards. Rye is the grain most grown, and rye bread is the common food of the people. Many cattle, hogs, and sheep are raised.

Among European countries, Germany ranks first in the production of iron ore, second in coal production, and it exceeds all other countries in the world in the production of zinc. Copper, lead, silver, sand for glass, clay for porcelain, and salt are also obtained.

Like England, Germany is a great manufacturing nation. Much of the sugar used in Europe is made in Germany from the sugar beet. The manufacture of woolens, cottons, silks, and linens ranks next in importance. Iron and steel and all kinds of hardware are extensively made, especially in the west, and porcelain and wooden articles are also important manufactures.

Commerce is very active, the foreign commerce exceeding that of the United States. The network of railroads is complete. Nearly all the rivers are navigable and are connected by canals. A ship canal across the isthmus of the Danish peninsula connects the Baltic Sea and North Sea.

The German Empire consists of twenty-two separate states, the free towns of Lubeck, Bremen, and Hamburg, and the territory of Alsace-Lorraine. Prussia, the largest of the states, has more than half of the entire population. The King of Prussia is also the Emperor, or *Kaiser*, of Germany. The laws are made by an imperial parliament, consisting of a *Bundesrat* whose members are appointed from the various states, and a *Reichstag* composed of representatives elected by the people.

Many thousand Germans have settled in the United States, and German merchants are found in nearly all newly settled countries. The foreign dependencies of Germany include extensive regions in Africa, possessions in the Pacific, and a settlement in China.

The small **Grand Duchy of Luxemburg**, between Germany and Belgium, is declared by treaty between the Great Powers to be neutral or independent, but commercially it is very closely united with Germany.

Berlin is the capital and largest city of the empire. Because of its museums, libraries, and institutions of

PALACE, BERLIN.

BANKS OF THE ZUIDER ZEE, HOLLAND.

learning, the Germans call it the "City of Intelligence." On what river is *Hamburg? Stettin? Bremen?* They are the great ports of the empire. Find *Munich* and *Dresden.* They contain famous collections of pictures; and fine porcelain ware is made near Dresden. *Leipzig* is famous for its great book-publishing houses. *Breslau* and *Cologne* are cotton-manufacturing centers. *Essen* is the center of the iron and steel industry.

Supplemental Work. Read chapters 20–25, "Carpenter's Geographical Reader, Europe."

The Kingdom of the Netherlands, or Holland. Bound the Netherlands. What sea indents the coast? What river delta crosses the southern part? What is peculiar about the elevation of the western part of the kingdom? (p. 123.) Compare its area and population with those of Germany.

The soil of the Netherlands, or "lowlands," is composed chiefly of fine rock waste deposited by the Rhine, which makes very fertile farm and pasture land. Nearly half the surface of Holland is ten feet or more below sea level. This area has been reclaimed by dikes built to prevent overflow. The surface water of these lowlands is collected in ditches and canals, and pumped out by means of steam power and by hundreds of windmills. The many miles of canal serve as highways of travel.

Although grain has to be imported, there is a large surplus of dairy products, vegetables, flower bulbs, and flax for export. The fisheries are valuable.

Shipbuilding and the making of bricks and pottery give employment to a great many persons. Butter, cheese, sugar, starch, and linen and cotton goods are among the leading manufactures.

Holland has a large domestic and foreign commerce. The exports include not only home products and manufactures, but also the spices, coffee, chocolate, and other merchandise from colonies in the East and West Indies and in South America.

The people of Holland are called the Dutch. They are noted for their cleanliness, industry, and thrift.

Amsterdam is the largest city and constitutional capital. The houses are built on piles; and the canals which run through many of the streets divide the city into about ninety islands. *The Hague* is the actual seat of government.

Most of the foreign trade of the country passes through *Rotterdam*, which is one of the great seaports on the mainland of Europe.

The Kingdom of Denmark. Bound Denmark. Of what natural divisions of land is it composed? Name the peninsula; the largest island. Compare Denmark with New Jersey in area.

Denmark has a more hilly surface than the Netherlands. There are salt marshes in the west, and the coast is bordered by shifting dunes. Parts of the country are covered with beech forests; the soil is fertile, and farming, the raising of cattle and hogs, and dairying are the leading industries.

The country is celebrated for its butter, which, with meat, forms its chief export. Most of these products are shipped to Great Britain and Germany.

CANAL AND WINDMILLS, HOLLAND.

The Faroe Islands, northwest of the British Isles, with Iceland, Greenland, and three of the West Indies, are Danish possessions.

Where is *Copenhagen?* It is the capital, the great seaport, and the largest city of Denmark.

The Kingdoms of Norway and Sweden. What peninsula do these kingdoms occupy? (p. 114.) Describe their surface; their drainage. Compare their eastern and western coasts. Name their chief mountain ranges. On which slope are there most lakes? Name two of these lakes.

Norway is a mountainous plateau whose west coast is much indented with deep, narrow fiords. At the heads of many of these fiords glaciers descend to the sea. Sweden slopes gradually to the east, and is covered with glacial drift. Like New England, it abounds in lakes and waterfalls (pp. 16, 43).

Fishing and lumbering are the chief industries in Norway; and agriculture, dairying, lumbering, and the mining of iron ore in Sweden. The leading manufactures are wooden ware, hardware, and fish oil.

Most of the trade of these countries is with Great Britain and Germany. Their commercial fleet is large, but is largely engaged in the commerce of other countries.

The Norwegians, Swedes, and Danes are closely related, and are called Scandinavians. Many of the farmers in the upper Mississippi valley are natives of the Scandinavian lands. Norway and Sweden are the most sparsely settled countries of Europe.

Each country has its own king and parliament.

Locate the capital of each country. *Stockholm*, one of the most beautiful cities in Europe and the largest on the peninsula, is the great industrial center. *Gothenburg* and *Christiania* have cotton and woolen factories and lumber mills. *Bergen* is the center of a great fish trade.

VILLAGE STREET, NORWAY.

Supplemental Work. Read chapters 15–19, "Carpenter's Geographical Reader, Europe."

Monarchy of Austria-Hungary. Bound Austria-Hungary. Name its mountain ranges. What river valley occupies its central part? Through what part of the country does the main European divide pass? On what waters does the only seacoast of the country border?

Mountain ranges traverse Austria-Hungary, and nearly inclose the low, fertile plains of Hungary. The Danube enters these plains through a gap which it has cut across the mountains; it leaves the plains through another similar gap called the Iron Gate.

Agriculture is the chief occupation, and grain, flax, hemp, olives, and grapes are raised. This is the only European country which has a surplus for export of all the great food products — grain, meat, dairy products, and wine.

The rearing of silkworms in the warmer parts of the country; the cutting of lumber in the east; and the mining of iron, coal, and rock salt in the north, are important industries. The northwest is a busy manufacturing region, in which cloth, steel goods, Bohemian glass, and porcelain are made. Weaving and spinning by hand are also done in all parts of the country, and much wine is made, especially in Hungary.

AUSTRIAN PEASANTS.

With its short seacoast on the Adriatic Sea, separated by mountains from the rest of the country, Austria-Hungary has comparatively little ocean commerce, but it has a large overland trade with surrounding countries, by railroad and by the Danube River.

Austria, which is chiefly Germanic and Slavonic, and Hungary, which is occupied mostly by the Magyars (a people of the yellow race), are united under one monarch. Each state has its own constitution and parliament, and both appoint delegations which consider affairs of common interest.

The little **Principality of Liechtenstein,** between Austria and Switzerland, and the Turkish provinces of **Bosnia** and **Herzegovina,** in the south, are practically parts of Austria-Hungary.

Locate *Vienna*. It is a brilliant and beautiful capital, and the fourth city of Europe in size. It is a great educational and manufacturing center. *Budapest*, the capital of Hungary, is an important grain market and milling center. *Prague*, in the Elbe basin, is in the manufacturing region. *Trieste* is the chief seaport.

SWISS ALPINE COTTAGE.

The Republic of Switzerland. By what countries is Switzerland surrounded? Describe its surface. Name the two largest lakes in the Alpine plateau. What four great rivers receive drainage from Switzerland?

Switzerland is much visited by tourists in summer, because of its high, snow-covered mountains, its great glaciers, which creep down into the green valleys, its glacier-made lakes, and its beautiful waterfalls.

The land is utilized to the snow limit, largely for pastures, and cattle raising is a leading industry. While some grapes, grain, and vegetables are raised, much of the food is imported; but dairy products — cheese and condensed milk — are largely exported.

CENTRAL EUROPE
Scale, 133 miles to one inch. same as the maps of Northern Section, Southern Section, Plateau Section. Pacific Section, British Isles, and Southwestern Europe
SCALE OF MILES
0 50 100 150 200 250 300
The highlands above 2000 feet are shown in the buff tints, the lowlands above sea level in the green tints, and the lowlands below sea level in the purple tint
BERLIN
AND VICINITY
Scale 10 miles to one inch
Longitude East from Greenwich
NORWAY
SWEDEN
FINLAND
RUSSIA
DENMARK
GERMANY
NETHERLANDS
BELGIUM
FRANCE
SWITZERLAND
AUSTRIA
HUNGARY
POLAND
BOHEMIA
GALICIA
SERVIA
BULGARIA
ROUMANIA
TURKEY
MONTENEGRO
BOSNIA AND SLAVONIA
EASTERN ROUMELIA OR SOUTHERN BULGARIA
NORTH SEA
BALTIC SEA
GULF OF BOTHNIA
GULF OF FINLAND
GULF OF RIGA
ADRIATIC SEA
MEDITERRANEAN SEA
Christiania
Bergen
Stavanger
Gothenburg
Stockholm
Upsala
Gefle
Abo
Helsingfors
St. Petersburg
Revel
Dorpat
Pskof
Riga
Mitau
Libau
Dunaburg
Vilna
Kovno
Konigsberg
Danzig
Warsaw
Lodz
Posen
Breslau
Berlin
Hamburg
Bremen
Hanover
Magdeburg
Leipzig
Dresden
Cologne
Frankfurt
Nuremberg
Munich
Augsburg
Stuttgart
Strassburg
Prague
Brunn
Vienna
Pressburg
Budapest
Debreczin
Kaschau
Lemberg
Przemysl
Cracow
Tarnopol
Gratz
Agram
Trieste
Venice
Milan
Turin
Fiume
Laibach
Temesvar
Arad
Hermannstadt
Kronstadt
Bucharest
Danube
Rhine
Elbe
Oder
Vistula
Dniester
Pruth
Save
Drave
Maros
Aar
Reuss
Inn
Lake Constance
Lake Geneva
Lake Wetter
Lake Wenner
Lake Balaton
Lake Como
Lake Maggiore
Mont Blanc
Simplon Pass
St. Gotthard
Brenner Pass
Zurich
Basel
Lucerne
Berne
Innsbruck
Salzburg
Linz
Sarajevo
Bahialuka
Mostar
Scutari
Sofia
Constantinople
Kiel
Lubeck
Stettin
Danzig
Konigsberg
Copenhagen
Malmo
Helsingborg
Gothenburg
Christiansand
The Naze
Skien
Drammen
Moss
Fredrikstad
Fredrikshald
Laurvig
Eskilstuna
Orebro
Norrkoping
Linkoping
Jonkoping
Gefle
Upsala
Aalborg
Aarhuus
Randers
Horsens
Odense
Halmstad
Kalmar
Karlskrona
Landskrona
Gotland
Oland
Bornholm
Rugen
Helgoland
Amsterdam
Rotterdam
The Hague
Haarlem
Leyden
Utrecht
Arnhem
Groningen
Zuider Zee
Brussels
Antwerp
Liege
Aachen
Ghent
Tilburg
Dusseldorf
Essen
Dortmund
Barmen
Elberfeld
Cassel
Hanover
Brunswick
Halle
Erfurt
Chemnitz
Zwickau
Aussig
Carlsbad
Pilsen
Wurzburg
Mannheim
Karlsruhe
Baden-Baden
Mulhausen
Metz
Luxemburg
Wiesbaden
Mainz
Darmstadt
Frankfurt on Main
Ulm
Augsburg
Munich
Salzburg
Innsbruck
Zurich
Basel
Lucerne
Berne
Lausanne
Geneva
Milan
Turin
Venice
Trieste
Fiume
Laibach
Agram
Temesvar
Arad
Hermannstadt
Kronstadt
Bucharest
Debreczin
Grosswardein
Klausenburg
Szentes
Hodmezo Vasarhely
Mako
Szegedin
Kecskemet
Theresiopel
Funfkirchen
Mohacs
Miskolcz
Budapest
Wiener Neustadt
Vienna
Pressburg
Brunn
Budweis
Pilsen
Prague
Carlsbad
Aussig
Chemnitz
Zwickau
Dresden
Gorlitz
Breslau
Posen
Warsaw
Lodz
Cracow
Przemysl
Lemberg
Tarnopol
Kolomea
Czernowitz
Jassy
Galatz
Ibrail
Varna
Rustchuk
Silistria
Sofia
Philippopolis
Adrianople
Constantinople
Widdin
Nissa
Uskub
Monastir
Salonica
Durazzo
Scutari
Cettinje
Mostar
Sarajevo
Bahialuka
Novi Bazar
Semlin
Belgrade
Iron Gate
Orsova
Turnu Severin
Craiova
Rustchuk
Varna
Silistria
Kustendje
Constantza
Sulina
Danube
Rhine
Elbe
Oder
Vistula
Dniester
Pruth
Save
Drave
Maros
Aar
Reuss
Inn
Lake Constance
Lake Geneva
Lake Wetter
Lake Wenner
Lake Balaton
Lake Como
Lake Maggiore
Mont Blanc
Simplon Pass
St. Gotthard
Brenner Pass
Zurich
Basel
Lucerne
Berne
Innsbruck
Salzburg
Linz
Sarajevo
Bahialuka
Mostar
Scutari
Sofia
Constantinople
Pankow
Weissensee
Spandau
Charlottenburg
Rixdorf
Kopenick
Teltow
Potsdam
Spree
Havel
Lower Havel
Schlachtensee
Grunewald
Tegel
Wannsee
Grosser Muggelsee
Kleiner Muggelsee
Langer See
Teufelssee
Jungfernsee
Templiner See
Schwielowsee
Schlachtensee
Grunewald
Tegel
Wannsee
Grosser Muggelsee
Kleiner Muggelsee
Langer See
Teufelssee
Jungfernsee
Templiner See
Schwielowsee

Switzerland is an active manufacturing region, although most of the articles are handmade. Almost every house is a miniature factory. Textiles, embroideries, plaited straw, watches and clocks, and carved wood are among the manufactured products.

PICKING GRAPES, FRANCE.

Railroad routes follow the Rhone valley into France, and the Rhine and its branches into Germany and Austria, while railroad tunnels pierce the Alps and afford connection with Italy.

German language and customs prevail in the north, French in the west, and Italian in the south.

Zurich, the largest city, is a manufacturing town, producing chiefly leather and silk goods. *Basel* is noted for the manufacture of silk ribbons, and *Geneva* for watch making. *Bern* is the capital city and chief railroad center of the country.

Supplemental Work. Read chapters 26–30, "Carpenter's Geographical Reader, Europe."

SOUTHWESTERN EUROPE

The Kingdom of Belgium. By what countries and sea is Belgium bordered? (pp. 127, 114.) Compare it in area and population with the other countries of Europe; with Massachusetts.

Belgium is the most densely populated country of Europe. In the north the people speak Flemish, a Germanic language much like the Dutch. In the south the people are like the French in race, language, and customs.

The greater part of Belgium is a low, fertile plain, much like Holland. Agriculture is here the chief occupation. Grain, sugar beets, and beans are raised, yet nearly half the food has to be imported. Flax is an important crop. In the south the land is poor, hilly, and forest-covered, but contains rich mines of coal and iron, and here manufacturing is the leading industry. Belgium is famous for the manufacture of steel goods, hardware, and textiles.

Brussels is a fine city, noted for the manufacture of lace, carpets, linens, ribbons, and embroideries. *Antwerp* is one of the chief ports of continental Europe. *Liege*, in the iron and coal region, is noted for the manufacture of firearms, pottery, and glass. *Ghent* is the chief seat of cotton weaving and leather manufacturing in Belgium.

HÔTEL DE VILLE (CITY HALL), PARIS.

The Republic of France. Bound France. Describe its surface, naming the mountains (p. 127). Trace through it the main European divide. What four rivers are on the northwestern slope? What river is on the southeastern? From the mouth of the Rhone trace a route by river and canal to Bordeaux on the Garonne; to Nantes on the Loire; to Havre on the Seine; to Strassburg on the Rhine. What large island is part of France?

France is one of the wealthiest nations of Europe. It is about twice as large as the British Isles, and is a much more important agricultural country. On the prairie lands of northern France about half as much wheat is produced as in the United States. Great crops of sugar beets, potatoes, and other vegetables are also cultivated, and many cattle and sheep are raised. The grape is a leading product of central and southern France. In the south, olives also are grown, as well as very many mulberry trees — for rearing silkworms is an important industry. In spite of its great agricultural industries, France is obliged to import both grain and meat, though there is a surplus of dairy products and wine for export.

There are several small coal fields and some iron mines in the east and north, but mining is not so important in France as in Great Britain or Germany.

Next to the British, the French are the chief cloth makers of Europe, and they are the foremost manufacturers of silks and velvets. They also make about one fourth of the world's product of wine. Among other important French manufactures are carpets, porcelain ware, steel goods, olive oil, confectionery, and fancy articles.

Among the countries of Europe, France ranks next after Great Britain and Germany as a commercial nation. Foreign commerce is carried on both by sea and by rail. Near Mont Cenis is a railroad tunnel through the Alps which gives access to the basin of the Po and northern Italy. The chief exports of France are wines, silks, velvets, woolens, and fancy articles; the chief imports are raw materials, metals, food stuffs, and petroleum.

The chief colonial possessions of France are in northern and western Africa, the island of Madagascar, and the eastern part of Indo-China. There are also colonies in the West Indies and South America, and in the Pacific.

Andorra, a small republic in the Pyrenees, is largely under the joint influence of France and a Spanish bishop. **Monaco** is a tiny independent principality near the southeastern extremity of France.

Where is *Paris?* It is the third city of the world in population, but it probably surpasses all others in magnificence and beauty. It is a great center of music, art, and learning. It is the chief railroad center of France, and has both railway and water communication with its port, *Havre*, at the mouth of the Seine.

SPANISH PEASANTS.

Find *Marseilles*. It is the chief port of the Mediterranean. *Lyons*, an important industrial city on the Rhone, is the center of the silk manufacture. *Bordeaux* is the great shipping point for wines. At *Lille* linen thread and beet sugar are made. Find *St. Etienne*. It is in a region of coal and iron mines, and is the great iron- and steel-manufacturing city of France.

Supplemental Work. Read chapters 10–14, "Carpenter's Geographical Reader, Europe."

The Kingdoms of Spain and Portugal. What peninsula do Spain and Portugal occupy? Describe its location and surface. Locate the chief mountains. Trace the main divide. Name four rivers of the Atlantic slope; one of the Mediterranean slope. What part of the peninsula is occupied by Spain? by Portugal? The Balearic Isles form a part of Spain. How does the peninsula compare with the eastern United States in latitude? In what part is the population most dense? (map, p. 113.) Name the capital of each country.

The uplands and mountain slopes of the Spanish peninsula are dry, but afford pasturage for many sheep and goats and for smaller herds of cattle. Agriculture is confined to the moist seaward slopes and the deep river valleys, where irrigation is possible. Thus only about one fourth of the land is cultivated. Wheat, barley, and corn are raised, but not enough for home consumption. The grape, olive, and other fruits are extensively cultivated, as well as peas, beans, and other vegetables. The forests of cork oak furnish most of the world's supply of cork. The sardine and tunny fisheries of the coast waters are very valuable.

Mining is an important industry, and Spain leads Europe in the production of copper, lead, and quicksilver. The quicksilver mines of *Almaden* are among the richest in the world. Much iron ore is shipped from *Bilbao* in the north to Great Britain.

The manufactures for which the peninsula is famous are wine and raisins, and these, together with olive oil, dried fruits, canned fish, corks, and leather, are exported. Other manufactures are textiles, paper made from esparto grass, soap, and some metal goods.

Spain ranks fifth among the European nations in shipping, but the vessels are mainly engaged in the coasting trade and in the fisheries; the foreign commerce is not large. There is an active domestic trade, however, both along the coasts and by the rivers and the canals and railroads which follow the river valleys through the plateau.

Spain once had large colonial possessions, which have now shrunk to a strip of the northwest coast of Africa, the volcanic Canary Islands off that coast, and some smaller west African possessions.

Besides the mainland portion, Portugal owns the Azores (p. 150), Madeira, and Cape Verde islands in the Atlantic; large parts of both the east and the west coast of Africa, and small tracts of coast in southeastern Asia.

Find *Madrid*, the capital of Spain. It is situated on the dry and barren plateau, and is the great railroad center and largest city of the peninsula. *Barcelona* is the manufacturing center and chief seaport of Spain. In *Valencia* are manufactured silk and velvet. This is the exporting point for fruits, oil, and wine produced in the fertile region behind it. *Seville*, a port at the head of tidewater on the Guadalquivir, has manufactories of silk and of iron. *Malaga* exports grapes, wine, and raisins.

Lisbon, the capital of Portugal, is the third city of the peninsula in size, and has one of the best harbors in the world. *Oporto* is a great shipping point for wine. The name "port" wine is a contraction of the name of this city.

The Kingdom of Italy. What countries and waters border Italy? What mountains border or traverse it? What river basin is in the north? What two great islands form part of the kingdom? Where is Mount Vesuvius? It is the only active volcano on the mainland of Europe, although Mount Etna, in Sicily, and Stromboli and Vulcano, on the Lipari Islands, are also active volcanoes.

Because Italy is sheltered by the Alps from north and northwest winds, it has an exceptionally warm climate for its latitude. The rainfall is abundant in autumn and winter, but the summers, especially in the south, are dry.

Much of the land is cultivated by the aid of irrigation, and about a third of the people are engaged in agriculture. Wheat, corn, and rice are grown, but grain also has to be imported. Vineyards are numerous and mulberry trees are cultivated; Italy is one of the greatest wine- and silk-producing countries in the world. On the slopes of the Apennines are chestnut and olive trees; figs, lemons, oranges, and citrons are also raised.

Wonderful crops of grass and other forage plants are produced in the Po valley, and so many cattle are raised that there is a surplus of meat for export. The fisheries furnish an important part of the food supply.

The most important mineral product of Italy is sulphur, from the sides of the volcano Mount Etna. Zinc and

lead are also mined. Excellent iron ore is obtained on the island of Elba, and fine marble is quarried on the mainland. Coral is obtained from the coast waters.

More than one fourth of the people of Italy are engaged in manufacturing. Silk is reeled from the cocoons by hand, and much of the fiber is woven on hand looms. Other important industries are the making of wine, macaroni, glass, and mosaics, and the cutting of coral and shells for jewelry.

Most of the foreign trade is carried on by railroads, which pass through several tunnels in the Alps. The chief exports are raw silk, wine, olive oil, and sulphur.

Italy has colonial possessions in East Africa, but it is not a great colonizing country. Many Italians emigrate to Argentina and Brazil, and to the United States.

San Marino is a small independent republic in eastern Italy.

Locate *Rome*. It is the capital, and, because of its ancient greatness, the most famous of Italian cities. Among its noted buildings are the Pope's palace, called the Vatican, with its magnificent collection of paintings and statuary; St. Peter's, the largest church in the world; and many famous ruins.

COLONNADE OF ST. PETER'S, AND (BEYOND THIS) THE VATICAN, ROME.

Find *Naples*, the largest city of Italy. It is the commercial center of the kingdom, and one of the most crowded cities of Europe. *Milan* and *Turin* are large and beautiful cities, and the commercial and manufacturing centers of northern Italy. *Palermo*, *Genoa*, and *Venice* are important seaports. Genoa is famous as the birthplace of Columbus. Venice is built on a number of small islands, and its main thoroughfares are canals instead of streets. *Florence* is noted for its art treasures and its romantic history.

Supplemental Work. Read chapters 40–46, "Carpenter's Geographical Reader, Europe."

EASTERN EUROPE

The Kingdom of Greece. By what country and waters is Greece bordered? (p. 114.) The kingdom includes some islands on the west coast, and the Grecian or Ægean Archipelago to the east.

RUINS OF THE PARTHENON, ATHENS.

Greece is divided by mountains into many small valleys. Its few rivers are rapid mountain streams and of little use for inland trade, but its deeply indented coast affords good harbors.

The land is owned largely by the peasants themselves, but they display little skill in its cultivation. The products are similar to those of Italy. Small dried grapes known as *currants*, iron ore, olive oil, and figs form the principal articles of export. The Greeks are good sailors, and much of the commerce of the Black and Mediterranean seas is conducted by them. Shipbuilding is an important industry. Most of the fine sponges of commerce are gathered from the eastern part of the Mediterranean Sea, and cured by Greeks.

Since the days of its early greatness, Greece has for long periods been under the rule first of Teuton barbarians and then of the Turks. Under the dominion of these foreign peoples it has been sadly reduced both in wealth and in culture.

Athens, the capital, is a growing commercial city. It

VENICE.

SOUTHWESTERN EUROPE
Scale, 133 miles to one inch, same as the maps of Northern Section, Southern Section, Plateau Section, Pacific Section, British Isles, and Central Europe
SCALE OF MILES
0 50 100 150 200 250 300
The highlands above 2000 feet are shown in the buff tints, the lowlands in the green tints, and the submerged part of the continental plateau in the light blue tint.
PARIS
AND VICINITY
Scale 10 miles to one inch
CONTINUATION OF ITALY
ENGLAND
FRANCE
SPAIN
PORTUGAL
ITALY
SWITZERLAND
GERMANY
AUSTRIA-HUNGARY
ENGLISH CHANNEL
Strait of Dover
BAY OF BISCAY
ATLANTIC OCEAN
MEDITERRANEAN SEA
TYRRHENIA SEA
ADRIATIC SEA
CORSICA (To France)
SARDINIA (To Italy)
BALEARIC ISLES (To Spain)
MINORCA
MAJORCA
IVIZA
FORMENTERA
CABRERA
Gulf of Lion
Gulf of Genoa
Gulf of Taranto
Strait of Gibraltar
Gibraltar (To Gr. Brit.)
Ceuta (To Sp.)
Tangier
MOROCCO
ALGIERS
MALTA (To Gr. Brit.)
PANTELLARIA (To Italy)
LONDON
Dover
Calais
Ghent
BRUSSELS
Waterloo
Antwerp
Liege
Boulogne
Lille
Roubaix
Tourcoing
C. de la Hague
Cherbourg
CHANNEL ISLANDS (To Gr. Brit.)
Havre
Rouen
Amiens
Rheims
Versailles
PARIS
St. Denis
Strasburg
Nancy
Metz
LUXEMBURG
Brest
Rennes
Le Mans
Orleans
Troyes
Nantes
Angers
Tours
Dijon
Besancon
Basel
St. Gallen
Zurich
Lucerne
BERNE
Lausanne
Geneva
Mt. Blanc
Rochefort
Limoges
Clermont Ferrand
Vichy
Mt. Dore
St. Etienne
Lyons
Grenoble
Turin
Milan
Brescia
Padua
Venice
Verona
Trieste
Bordeaux
Alessandria
Modena
Ferrara
Bologna
Ravenna
Genoa
Nice
MONACO
Marseilles
Toulon
Toulouse
Montpellier
Nimes
Perpignan
Bayonne
San Sebastian
Bilbao
Santander
Gijon
Oviedo
Coruna
Ferrol
C. Ortegal
Finisterre
Vitoria
Pamplona
Burgos
Valladolid
Braga
Oporto
Douro
Coimbra
Salamanca
Zamora
Toro
Sa. de Gata
Sa. de Guadarrama
Sa. de Gredos
MADRID
Tajo
Toledo
Tortosa
Tarragona
Barcelona
Saragossa
C. Creux
C. Corse
Ajaccio
Bonifacio
Sassari
Cagliari
C. Teulada
Leghorn
Lucca
Florence
Pisa
Ancona
Perugia
ROME
Foggia
Naples
Mt. Vesuvius
Bay of Naples
Castillon de la Plana
Valencia
Palma
Lisbon
Setubal
Evora
Badajoz
Guadiana
Almaden
Cordova
Linares
Jaen
Seville
Guadalquivir
Alicante
Murcia
Lorca
Cartagena
Palos
Jeres de la Frontera
Cadiz
Malaga
Almeria
Granada
Antequera
C. St. Vincent
Bari
Brindisi
Mt. Vesuvius
Naples
Gulf of Taranto
Strait of Otranto
Palermo
Messina
Reggio
C. Spartivento
STROMBOLI
LIPARI IS.
Mt. Etna
Catania
Longitude West 0 Longitude East 5 from Greenwich 10
E.Y. FARQUHAR DEL.
BRADLEY & PLATES, ENGR'S, N.Y.

contains relics of former splendor, among them the ruins of the Parthenon, a famous ancient temple.

The Empire of Turkey. By what countries and waters is European Turkey bordered? (p. 114.) This is but part of the Turkish Empire, which extends over southwest Asia and part of northern Africa, and claims Egypt as a tributary state. Crete, though nominally subject to Turkey, is really self-governing under the protection of the Great Powers. The population is chiefly Greek. Name and locate the capital of the empire. The entrance to what sea is controlled by Turkey? Through what straits and what sea is this entrance?

Turkey receives its name from the Turks, a people of the yellow race who, about 500 years ago, extended their Asiatic empire over a large part of southeastern Europe. Their European territory has been gradually taken from them until now it is not so large as the state of Missouri. It contains nearly twice as many people, however. The population is very mixed, consisting of Turks, Greeks, Slavs, and Gypsies. The ruler, called the *sultan*, has great power, but now his subjects are allowed to take some part in the government. The officers of the government are often dishonest and cruel in collecting the heavy taxes.

In Turkey more land is devoted to pasture than to farming, and the agricultural methods and implements are very rude. Grain, tobacco, cotton, grapes, and tropical fruits are grown. Manufactures are few. Carpets, cloth, and jewelry are made by hand. The trade is conducted mainly by Greeks, Jews, and Armenians. Raw materials, wine, and food are exported in exchange for manufactured goods. There are few railroads in the country, and roads are bad, so that domestic trade does not flourish.

Constantinople, the capital, commands the entrance to the Black Sea and is considered a key to the military control of eastern Europe. It is a large city and is noted for its beautiful mosques, or Mohammedan places of prayer, but most of the streets are unpaved and filthy. *Saloniki* is an important port, with a large Jewish population.

The Minor Balkan States. Name the four states between Turkey and Austria (p. 114). All these states formerly belonged to Turkey, but each is now independent. Which of them lie in the Danube basin? Which border on the Black Sea? Which borders on the Adriatic Sea? Which has no seacoast? By what mountains is each bordered or crossed?

THE GOLDEN HORN (HARBOR), CONSTANTINOPLE.

In the **Kingdom of Roumania** and the **Principality of Bulgaria** agriculture is the leading occupation, and both countries export wheat, corn, and wine, cattle and sheep. The imports are manufactured goods, chiefly from Austria. Roumania is so named because it was settled by the ancient Romans. Bulgaria was settled by people of the Turkish type of the yellow race. Both countries are now peopled largely by Slavs. What is the capital of each country? Bulgaria, though formerly tributary to Turkey, is now independent.

The **Kingdom of Servia** and the **Principality of Montenegro** are less advanced in industry than Bulgaria and Roumania. Both are mountainous, forest-covered countries. Hogs fatten in the forests, and grain and wine are produced. What is the capital of each country?

PEASANT'S CART, TURKEY.

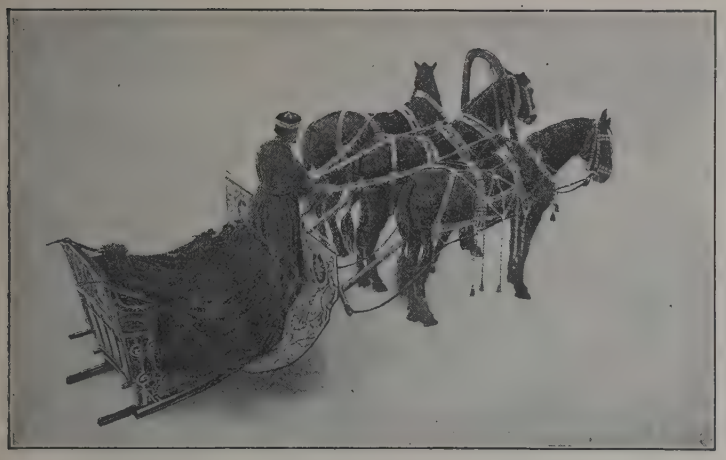
Supplemental Work. Read chapters 31, 37–39, "Carpenter's Geographical Reader, Europe."

The Empire of Russia. Is the greater part of the Russian Empire in Europe or in Asia? (map, pp. 130, 131.) About five sixths of the people, however, live in European Russia. How does European Russia compare with the United States in extent? in population? (p. 153.) What two mountain systems are on the borders of European Russia? (p. 114.) What ocean, seas, and rivers? What countries? Describe the surface of European Russia; its drainage.

The surface of European Russia, like that of our Prairie plains, is very smooth and flat. In the north are hills of glacial drift and many lakes, for this region was once covered by the Scandinavian glacier (§ 60). In the extreme southeast are many small salt lakes.

In the north the winters are long and very cold, and even in the south the winters are severe, though the summers are hot. The rainfall, though not abundant, is sufficient for crops except in the extreme southeast.

Fishing, hunting, and lumbering are pursued in the north, but the great industry of Russia is farming. Much



RUSSIAN SLEIGH.

more grain, meat, and wool are raised than are consumed at home. They are produced chiefly in the south central part. More wheat is grown than in any other country except the United States, and a large part of it is exported. Rye is extensively grown, and rye bread is largely used by the poorer people. Sugar beets, tobacco, and flax are widely cultivated, and in the south are many vineyards. The flax is raised both for the linen fiber and for the seed.

The peasants or farmers live in village communities, or *mirs*. The land around a village is owned or rented by the whole mir. It is portioned out to each family according to the number of its members, a large piece being reserved as a common grazing ground.

Platinum, gold, and some coal and iron ore are mined in the southern Ural Mountains, and coal in central and southern Russia. Salt is obtained from the salt lakes in the southeast. Near Baku, on the west coast of the Caspian Sea, are petroleum wells which, with those of our country, produce most of the world's supply of kerosene.

In the large cities, alcohol, cloth, machinery, beet sugar, flour, and leather are made. A great deal of manufacturing is carried on by the peasants in their homes. The rivers are connected by canals and are much used as commercial routes. Western Russia is moderately well supplied with railroads (p. 117). Much trade is carried on at annual fairs, where merchants bring their goods from great distances. The largest fair is held at Nizhni Novgorod.

Most of the people are Slavs, but the Lapps and Finns in the northwest, and the fierce Cossack horsemen in the southeast, are people of the yellow race. There are also many Jews.

The Emperor, or *Czar*, of Russia, long an absolute monarch, has recently granted to the people some share in the government through a representative assembly, called the *Duma*.

Locate *St. Petersburg*, the capital. It is in a desolate, marshy region, where the ground and harbor are frozen for several months in winter. It is a magnificent city of palaces and varied industries, and has many manufactories. It is entered by several railways, and a ship canal leads through the shallows of the Gulf of Finland to the spacious harbor.

Find *Moscow*. It was once the capital of Russia, and is a manufacturing city of importance. *Warsaw*, the chief city of Poland, is another important center of manufacture and trade. *Odessa*, situated on the Black Sea, is a flourishing modern city, and the chief wheat-shipping port of the country. *Kief* and *Kharkof* are large trade centers of the agricultural region of southern Russia; and *Riga*, near the Baltic Sea, is the chief northern seaport.

Supplemental Work. Read chapters 32–36, "Carpenter's Geographical Reader, Europe."

TOPICS ON EUROPE

I. EASTERN EUROPE. Balkan states: governments; people — history, races, religions, condition; products. Russia: extent; government; people; climate; products.

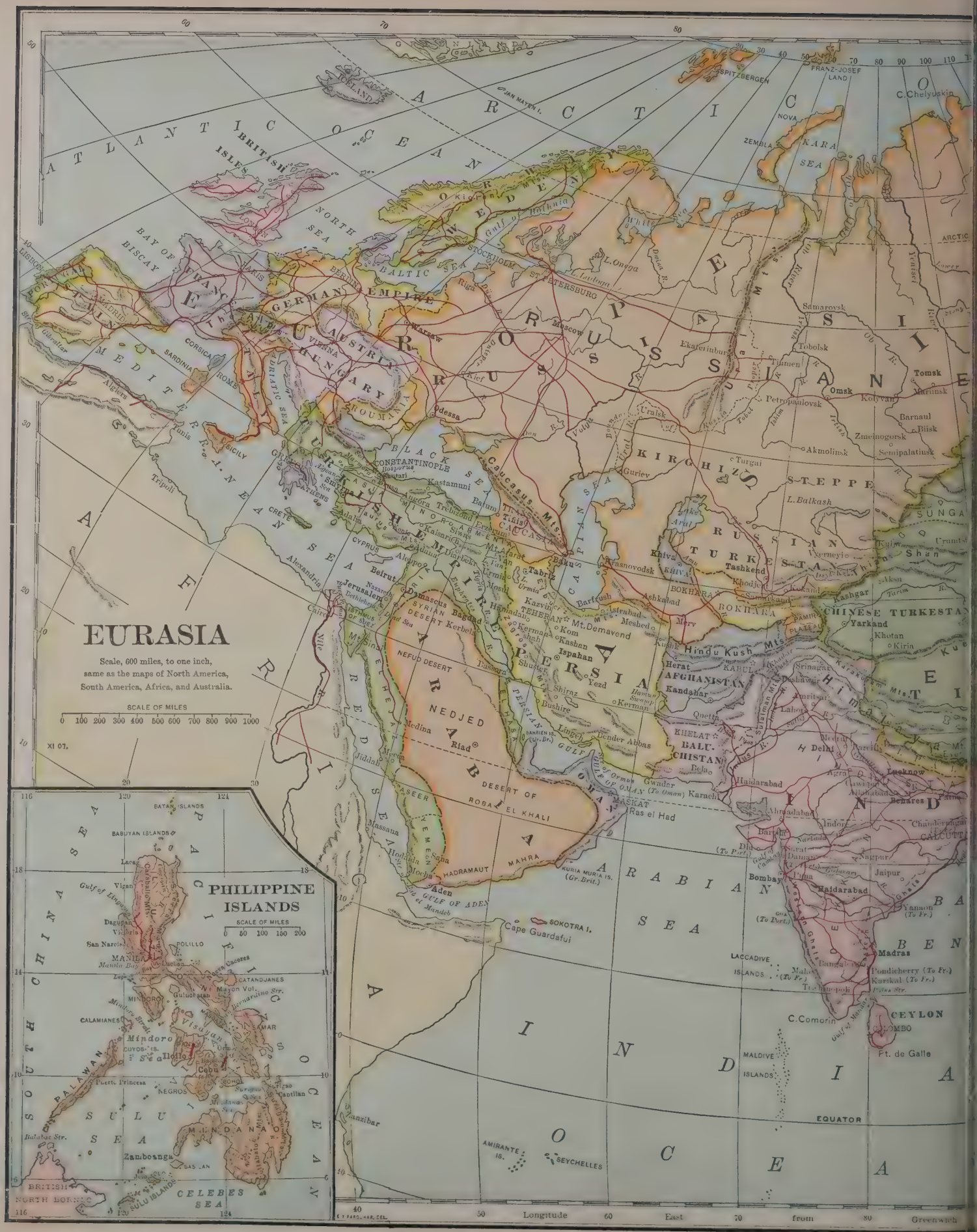
MOSCOW.

II. NORTHERN EUROPE (countries wholly or mostly north of 50° N. Lat.). Peninsular: countries; governments; people — race, density, history, occupations; products; climate. Continental: countries; governments; people — race, density; occupations; products; soil. Insular: divisions; possessions; people — density, history, occupations; products.

III. SOUTHERN EUROPE. Peninsular: countries; governments; people — race, history, occupations; products; climate. Continental: countries; governments; people — races, history, occupations; products — western, central, eastern.

IV. EUROPEAN TRADE. Routes of trade: by sea; by rivers and canals; by land. Products imported; products exported. Chief carriers.

V. EUROPEAN CITIES. Capitals: each pupil may describe one. Seaports: each pupil may describe one. Manufacturing centers: each pupil may describe one.


EURASIA
Scale, 600 miles, to one inch,
same as the maps of North America,
South America, Africa, and Australia.
SCALE OF MILES
0 100 200 300 400 500 600 700 800 900 1000
XI 07.
PHILIPPINE ISLANDS
SCALE OF MILES
0 50 100 150 200
ATLANTIC OCEAN
ARCTIC OCEAN
PACIFIC OCEAN
INDIAN OCEAN
SOUTH CHINA SEA
CELEBES SEA
SULU SEA
MEDITERRANEAN SEA
RED SEA
ARABIAN SEA
BLACK SEA
CASPIAN SEA
NORTH SEA
BALTIC SEA
BAY OF BISCAY
PERSIAN GULF
GULF OF OMAN
GULF OF ADEN
EUROPEAN RUSSIA
SIBERIA
RUSSIAN TURKESTAN
CHINESE TURKESTAN
KIRGHIZ STEPPE
ARABIA
PERSIA
AFGHANISTAN
BALUCHISTAN
BRITISH INDIA
BRITISH ISLES
FRANCE
GERMAN EMPIRE
AUSTRIA-HUNGARY
ITALY
TURKEY IN ASIA
SPAIN
PORTUGAL
SWEDEN
NORWAY
ICELAND
SPITZBERGEN
FRANZ-JOSEF LAND
NOVA ZEMBLA
KARA SEA
WHITE SEA
CEYLON
LACCADIVE ISLANDS
MALDIVE ISLANDS
SEYCHELLES
AMIRANTE IS.
KURIA MURIA IS. (Gr. Brit.)
SOKOTRA I.
BARRIEN IS. (Gr. Br.)
EQUATOR
Longitude East from Greenwich

ASIA

Review of Physical Features and Life (pp. 109–113). What physical features are often considered boundaries separating Eurasia into the two grand divisions of Europe and Asia? How do these divisions compare in size? Name the oceans and ocean arms which border the northern, eastern, and southern coasts of Asia. Locate five peninsulas of Asia, and name the waters they separate. What three island groups are off the east coast? Name three great rivers of the Arctic slope; four of the Pacific slope; four of the Indian Ocean slope. Is the interior region between the basins of these rivers entirely highland? Explain the relation between the rainfall and the drainage of this interior region. Describe briefly the great highland of Asia, its extent, altitude, mountain ranges, climate, and surface peculiarities. Describe briefly the great northern lowland; the Pacific slope; the Indian Ocean slope.

Locate and describe briefly the characteristic forms of vegetation in the northern lowland of Asia; the characteristic forms of animal life. In the same manner describe the distribution of life forms in the highland region; on the southern and southeastern slopes of Asia. Locate the three races which inhabit Asia. Locate four peoples of the white race; two peoples of the yellow race. How does Asia compare with Europe in population? with North America? Locate the two great regions of very dense population in Asia. More than three fourths of all the people in Asia live in these two regions, and about half the remainder live on the islands to the east and southeast. In what stage of culture are most of the people in Asia?

PEOPLE

Civilization. More than half the people in the world live in Asia. Nearly all of them are somewhat civilized, though their civilization is as rude and imperfect in many particulars as that of Europe was a thousand years ago. It is very different, however, from the early European civilization, and the languages, habits, dress, and manners of the peoples of Asia seem strange to us, who have received our civilization from Europe.

Throughout most of Asia the women are considered as little more than servants or slaves. They are seldom educated, and in some countries are bought and sold. Among the native peoples of the mainland the value of machinery is scarcely yet recognized, and nearly everything is done by human labor or by that of domestic animals. As such labor yields little profit, the great mass of the people are wretchedly poor. In the moist regions of the southeast, where the food is mainly vegetable and fairly plentiful, the population is dense. But even there, when the crops fail, a terrible famine occurs and thousands of people starve, because of the lack of facilities for transporting food to them. The few railroads are mostly in the hands of the Europeans who have settled in Asia.

Commerce. Because of the lack of improved implements and means of transportation, the products and commerce of Asia are slight in comparison with its large population. Although there are more than twice as many people in Asia as in Europe, the foreign commerce is but one sixth as great as that of Europe, and is less than that of the United States.

Most of the foreign commerce is carried on by the countries and islands in the southeast and east, which have ample rainfall and dense population.

Governments. The native peoples on the mainland of Asia are just beginning to learn how governments may be conducted for the benefit of the people. Until our own day most of the countries were absolute monarchies, as those of Europe were a thousand years ago. The ruler had almost unlimited power over the lives and property of his subjects, whom he often treated unjustly.

The people of the island empire of Japan are the most progressive native people of Asia. They have adopted a limited monarchy as their form of government. Persia and China are now trying to adopt this form of government also. India, in southern Asia, which belongs to Great Britain, and Anam, which belongs to France, are each governed by Europeans sent out from the home country. The United States, the Netherlands, and Great Britain control the islands between the Empire of Japan and Australia.

Religion. Mohammedanism is the prevailing religious faith in southwestern Asia, although there are many Christians and Jews in Asia Minor. In India the mass of the people believe in Brahmanism, but there are also very many Mohammedans, and Mohammedanism is the prevailing religion in the East Indies. In Indo-China, China, and Japan most of the people are Buddhists, while in Siberia the Greek form of the Christian religion prevails.

YAKUT NATIVES PLOWING, EASTERN SIBERIA.

COUNTRIES

Asiatic Russia. Describe the boundaries of Asiatic Russia. What is the name of the greater part of it? Find the distance in miles from the Ural Mountains to the Sea of Okhotsk. Describe the surface of Siberia. Name three great rivers of the Arctic slope; one of the Pacific slope. Why are there no seaports on the northern coast?

The summers of **Siberia**, though short, are so warm that grain ripens almost as far north as the Arctic Circle; but the winters, even in the south, are very cold. In

MOHAMMEDAN MOSQUE, BOKHARA.

southern Siberia are broad tracts of fertile grain land, and grassy plains which furnish pasturage for thousands of cattle and horses. Gold, coal, iron, and other minerals are found along the edge of the highland.

Branches of the great Siberian rivers rise so near to one another that they form a natural water way with short portages, far through the interior. It is mainly by this route that the more distant provinces are reached, though a railroad from St. Petersburg to *Vladivostok* and Peking traverses this region, passing through *Omsk* and *Irkutsk*, the principal trade centers of Siberia. All along this railroad towns are growing rapidly, and the country is being settled with emigrants from European Russia who are attracted by cheap land.

Siberia is yet very sparsely populated. It contains fewer people than the state of Pennsylvania. Most of the inhabitants are immigrants from European Russia. Some were sent as exiles, who have remained in Siberia after their sentences have expired. There are also many small wandering tribes of natives.

The greater part of the **Kirghiz Steppe,** which lies southwest of Siberia, is dry and barren. The few people who live there raise cattle or cultivate the oases that occur here and there in the great plain. Farther south, in **Russian Turkestan,** the land is better watered and better tilled. Here not only are cattle raised, but grain, cotton, and fruit are cultivated, and much raw silk is produced. *Tashkend* is an important center of trade and domestic manufacture — chiefly of silk and leather goods.

Transcaucasia, west of Caspian Sea, is separated from European Russia by the Caucasus Mountains. It is about twice as large as the state of Pennsylvania, and contains about as many people as the whole of Siberia. Many European Russians have recently settled in both Russian Turkestan and Transcaucasia.

Wheat, corn, and barley are raised in Transcaucasia. Much petroleum, refined near the *Baku* wells, is shipped into Russia by the Caspian Sea and the Volga River, and

much is conveyed to *Batum*, whence it is shipped to other countries. *Tiflis* is the largest city of Asiatic Russia.

Bokhara and **Khiva** are small states under native rulers who are vassals of Russia. Handmade rugs and carpets from these states are sold throughout Europe and the United States.

Supplemental Work. Read chapters 11 and 36, "Carpenter's Geographical Reader, Asia."

GOVERNMENT OFFICERS, BOKHARA.

Asiatic Turkey. What waters form part of the boundaries of Asiatic Turkey? What countries border on it? By what is it separated from European Turkey? Where are its mountains? Name its rivers and describe its drainage.

The valleys of Asiatic Turkey once yielded large quantities of grain and other products, and contained a large and powerful population, but under the rule of the Turks the whole country is in a state of decay.

About half of the people are Turks; the rest are chiefly Arabs, Armenians, Greeks, and Jews. The raising of sheep and goats is the leading occupation. The wool is woven by hand into carpets and rugs, and

TURKISH MERCHANTS.

the goats' hair into shawls. In the fertile parts of the country figs and dates are grown, and some cotton, tobacco, opium, and raw silk are produced.

Locate the seaport of *Smyrna*, and the cities of *Damascus* and *Bagdad*. These are the chief commercial centers of Asiatic Turkey, and were all famous in olden times. Bagdad serves as a port for Persian trade. *Beirut* is the port for Damascus, and exports much silk. *Jerusalem* was the holy city of the Jews, and the scene of many events described in the Bible. *Mecca* is noted as the birthplace of Mohammed.

Arabia. What waters partly surround the Arabian peninsula? To what country does most of the coast land belong?

The greater part of the peninsula is a desert plateau more than half a mile above the level of the sea. Although there are no great rivers in Arabia, there are several large oases which are watered by short streams and are green with vegetation. Most of the coast region is a part of the Turkish Empire.

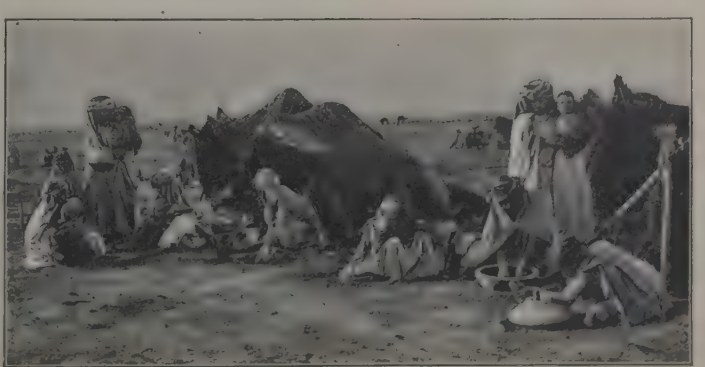
The interior is independent, and its people have made little advance in many centuries. There is no central government, but each tribe is ruled by its own chief, or *sheik*. The Bedouins, or desert Arabs, live in tents and move from place to place with their herds of camels and horses as the seasons change. Other Arabs live in villages, cultivate the soil, and carry on a limited commerce. The land, wherever it is irrigated, yields abundantly, and dates, indigo, coffee, and barley are produced. These, with myrrh, gum arabic, and pearls, are the chief exports.

The chief seaport is *Aden*, which belongs to Great Britain. It is an important coaling station for steamers.

Oman is a native state under the influence of Great Britain. *Maskat*, the capital, is a seaport of some importance, from which dates and other fruits and pearls are exported. In the Persian Gulf are the richest pearl fisheries in the world.

Persia. What waters partly surround Persia? What countries border on it? Describe its surface and drainage; its climate.

Persia lies chiefly on a hot desert plateau. Along the coasts the date palm flourishes, and there are fine forests



BEDOUINS AND THEIR TENTS, ARABIA.

PERSIAN RUG MARKET.

of cedars, elms, and oaks. All kinds of fruit grow in the lowlands. Wheat, barley, rice, cotton, and opium are cultivated. The raising of cattle, sheep, and camels is the chief business of many of the people.

Handmade rugs and carpets and camel's-hair cloth are almost the only manufactures. Trade is carried on by caravans. There are few good roads. The principal exports are opium, pearls, rugs and carpets, and dates.

Besides the Persians, there are many Arabs, Armenians, and Turks in the country. The caravan trade is controlled mainly by Arab merchants; the foreign trade, by the Armenians. The *Shah* of Persia, like the Czar of Russia, has recently granted the people some share in the government.

Teheran, the capital, and *Tabriz* are the chief centers of the caravan trade. *Ispahan*, the former capital, has great bazars and magnificent palaces. *Bushire* and *Barfrush* are the most important ports.

Afghanistan. What countries surround Afghanistan? Describe its surface and its drainage.

Afghanistan is a mountainous region with fertile valleys where crops are raised by the aid of irrigation. Wheat and barley are harvested in summer, and rice, millet, and corn in autumn. Fruits and drugs are produced.

The population of Afghanistan is made up of many tribes, mostly of Aryan descent, all loosely united under a ruler called the *ameer*.

Next to agriculture and stock raising, the chief industries are the making of silk goods, felts, and rugs and carpets. Besides these products, horses, spices, and fruits are exported.

Herat, *Kandahar*, and *Kabul*, the capital, are fortified towns and centers of considerable caravan trade.

Baluchistan. By what countries and sea is Baluchistan bordered? Describe its surface and climate.

Baluchistan is about half as large as the state of Texas. It is governed by a native ruler, or *khan*, who is under the control of the British government in India. The people are very similar to those of Afghanistan. The wandering tribes are engaged in raising camels, horses, sheep, and goats. *Khelat* is the capital.

Supplemental Work. Read chapters 32–35, "Carpenter's Geographical Reader, Asia."

SHOEMAKERS, PERSIA.

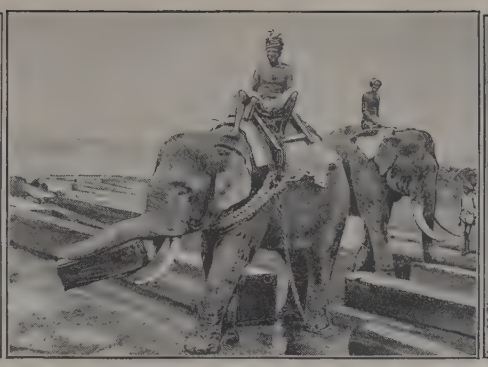
India. Bound India (p. 130). Describe the surface and drainage of Hindustan; of the Dekkan (p. 108). What two rivers of India rise north of the Himalayas? Name a branch of the Indus. Where is the Ganges River? Name two rivers of the Dekkan.

India has mountain ranges in the east and west, great lowland plains in the north, and the plateau of Dekkan in the south. The highest mountain range in the world forms part of the northern boundary. The climate is hot except on the highlands, and the southwest monsoon brings heavy rains in summer to the Western Ghats and to northeastern India. Much of the Dekkan and of northwestern India are dry.

India is about half as large as the United States, but its population is about four times as great. The people are mostly Hindus, a dark-skinned people of the Aryan branch of the Caucasian race.

NATIVES OF AFGHANISTAN.

BULLOCK CART, INDIA.



ELEPHANTS WORKING, INDIA.

NATIVE BARBER, INDIA.

The British have gained control over nearly all the native states, and now govern almost the entire country, although there are comparatively few British people in India. A British governor general, or viceroy, lives in India.

There was a Hindu civilization long before the arrival of the British. The Hindus had a written language, an ancient literature, and a highly organized system of society. The people are divided into *castes*, or fixed classes. A Hindu must live, marry, and die in the same class and follow the same occupation as his father; consequently the Hindus have made little progress for a long time. The houses of the low-caste people are small and miserable hovels, without floors and with little or no furniture. The farming implements and methods are of the rudest description, and the flour or meal is generally ground by hand.

The population of India is most dense in the great northern plain drained by the Ganges, and in those parts of southeastern Dekkan where irrigation is successful. It is least dense in the dry and barren parts of the Indus valley.

Most of the people live by agriculture, raising millet and rice for their own use, and various other products for export. Rice, jute, and bamboo grow in the delta of the Ganges. Farther up the river the mulberry and the opium poppy are cultivated. Cotton, wheat, and pepper are grown in the Dekkan, where there are also large plantations of coffee. Tea and the cinchona tree from South America are cultivated on the Himalaya foothills. In the valley of the Brahmaputra the growing of seeds for making oil similar to linseed oil is one of the most important industries.

Many miles of irrigating canals have been dug in the Ganges valley, and reservoirs have been built in the Dekkan to supply water in times of drought. Yet the rainfall is so irregular in many districts that terrible famines sometimes occur on account of the failure of the crops.

Manufacturing is being rapidly developed by the Europeans, and cotton, woolen, and jute goods, and paper are made. There are some iron mines in India, and many coal mines, but there are few manufactures of iron. Most of the manufactured goods — fine cottons, silks, gold embroideries, cashmere shawls, carved ivory, jewelry, beautiful rugs, and embroidered leather goods in great variety — are still made by hand by the native workmen.

The British have caused good roads to be constructed in nearly all parts of the country, and have built about 30,000 miles of railroad. These are the chief means of transportation; for the rivers, the lower Ganges excepted, are not extensively navigated. Elephants, camels, buffaloes, and zebus are used as beasts of burden.

The foreign commerce of India is about one third that of all Asia. About half of it is with Great Britain, and much of the remainder with China. The principal exports are cotton, jute, rice, oilseeds, opium, tea, hides, and wheat. Cotton cloth, machinery, ironware, and refined sugar are the chief imports.

Calcutta, in the great delta region of the Ganges-Brahmaputra river system, is the capital and chief seaport of India. *Bombay*, the largest city on the western coast, is important as the chief port for the shipment of Indian cotton. *Madras* and *Haidarabad* are great centers of trade; and at Madras is manufactured much fine cotton cloth called "madras" after the name of the city. *Lucknow*, *Benares*, and *Delhi* are large cities.

STREET IN COLOMBO, CEYLON.

Nepal and **Bhutan** are native monarchies under British influence in northern India.

Ceylon is a separate British colony. The chief products of the island are tea and cocoanuts. *Colombo* is the chief city.

VILLAGE STREET, BURMA.

The Countries of Indo-China. What divisions of British India lie east of the Bay of Bengal? What narrow peninsula extends still farther south? What British possession occupies the southern part of the Malay peninsula? What country comprises the eastern part of Indo-China? What is the country in the central part called?

Name the chief rivers and gulfs of Indo-China. In what direction do the mountain ranges extend?

Indo-China is traversed by mountain ranges and is largely forest-covered. Most of the people are Mongolians, but there are many Malays in the south. In the valleys and river deltas the population is very dense.

The chief products of Indo-China are rice, sugar, spices, lumber, and tin. The other mineral resources have not yet been largely developed. The foreign commerce is conducted almost entirely by Europeans, but the local merchants are Chinese.

Upper and **Lower Burma** are part of British India, but the **Straits Settlements** form a separate British colony.

Anam, with **Tonkin, Cambodia, Cochin China,** and the **Laos** territory, is under the control of the French, though Anam and Cambodia have native rulers.

Siam is a native kingdom. It is important as an inter-boundary or "buffer state" between British and French possessions.

Bangkok, the capital of Siam, is built partly on piles and rafts in the Menam River. *Rangoon* and *Mandalay* are the principal cities and trade centers of Burma. The shipments of rice and teak wood are important. *Hanoi*, in Tonkin, is the seat of government for French Indo-China. *Singapore*, in the Straits Settlements, exports spices, gums, and the larger part of the world's supply of tin, and is a very important port of call.

Supplemental Work. Read chapters 19–30, "Carpenter's Geographical Reader, Asia," and chapters 36–37, "Carpenter's Australia," etc.

The Chinese Empire. In what part of Asia is the Chinese Empire? What waters border it? What mountains are on its southwestern border? on its northwestern border? What plateau forms the western part? the northern part? What are its two great rivers? Into what does each flow? Where is the Grand Canal? Besides China proper, what four other countries are included in the Chinese Empire?

China proper, or the Middle Kingdom, as the Chinese call it, has broad fertile river plains and valleys, and abundant summer rains, and contains about nine tenths of the population of the empire.

The Yangtze is navigable for hundreds of miles by the largest ocean steamers. This river, with its tributaries, and the Si River in the south afford the only easy means of communication in the interior. The Hoang is loaded with sediment and is so obstructed by sand bars that it is not navigable. It often overflows its banks, causing widespread disaster, and several times it has changed its course entirely.

The Grand Canal connecting the Hoang and the Yangtze was built more than a thousand years ago, and is still much used as a highway. There are several other canals. A few railroads have been built, and several thousand miles are under construction. The roads are poor and, away from rivers and canals, goods are carried for the most part on the backs of porters.

The people are Mongolians. Buddhism forms part of the prevailing religion, but the Chinese are especially devoted to the worship of ancestors. This makes the people unwilling to leave the ways which their ancestors followed; hence the Chinese are suspicious of foreigners and dislike foreign customs. Their dress and manners, and even the construction of their houses, are regulated by laws made hundreds of years ago. It was not until near the middle of the nineteenth century that they would trade with other nations. Yet the Chinese were among the first people in the world to become civilized.

The government has long been an absolute monarchy, in which the emperor has appointed his own successor. Now an effort is being made to develop a limited monarchy, with a parliament chosen partly by the people.

Education is general among the men, but neglected among the women. The language has no alphabet; each written character stands for a syllable or word, and a Chinese boy must learn to know several thousands of these characters by sight.

GOLDEN PAGODA, RANGOON, BURMA.

Agriculture is the chief occupation. Wheat and millet are grown in the north, while in the south rice is the principal crop. China exceeds all other countries in the production of tea and raw silk.

Coal is found in many parts of China, but is not extensively mined, though it was used as fuel by the Chinese long before its value was known in Europe. There are also rich deposits of iron and copper, which with improved methods of mining may be made very productive.

Foreign trade is largely with Great Britain, Japan, and the United States, and is confined to certain cities opened by treaty to foreigners. Tea and silk are the most important exports. Beautiful hand-woven silk, raw cotton, lacquered ware, and ivory carvings are also exported. Cotton cloth and other manufactures are the principal imports.

Chinese Coolies carrying Cotton Yarn.

China has many large cities, but their streets are narrow, unpaved, and filthy. The houses are low and built mostly of bamboo or of sun-dried brick, with earthen floors and paper windows, and without fireplaces or stoves. *Peking*, the capital, is the center of a large caravan trade, chiefly with Siberia, and is supposed to have about as many people as Philadelphia. *Tientsin* is the seaport of Peking. *Canton* and *Shanghai* are the chief ports of American trade. *Hankau* and *Hangchau* are both large cities.

Tibet. The people of the high Tibetan plateau belong to the yellow race. They carry on a considerable caravan trade with lowland China and some little with India through passes in the Himalayas. The chief products are silver, gold, salt, wool, and borax. A little woolen cloth is woven. It is almost impossible for Europeans to enter any part of the country. *Lassa*, the capital, was so jealously guarded that until recently very few white men have been admitted within its walls.

Chinese Turkestan is inhabited by wandering tribes, who are but partly civilized, and are engaged in herding.

Great Wall of China.

Mongolia is an extensive, arid, and sparsely peopled region. The chief wealth consists of herds of camels, horses, and sheep.

Manchuria is a fine farming region. Wheat, beans, tobacco, live stock, and lumber are important products. Coal is mined and other minerals are found. *Mukden*, the capital, is the center of considerable trade. *Harbin* is an important center of trade between Russia and China. Russia built railroads through Manchuria to Vladivostok and *Port Arthur*, but Port Arthur and part of the railroad are now controlled by Japan.

Hongkong, an island which was ceded by China to Great Britain, is the center of a large foreign trade. **Kiauchau** has been leased by China to Germany; **Weihaiwei,** to Great Britain; **Kwangchau,** to France. **Macao** belongs to Portugal.

Supplemental Work. Read chapters 12–18, "Carpenter's Geographical Reader, Asia."

Korea. What waters nearly surround Korea? What is the capital? its seaport?

The people of Korea resemble the Chinese in appearance, in religion, and in many of their customs. Until recently they refused to have intercourse with European nations. The government is practically in the hands of the Japanese. The chief industry is agriculture, but only a small portion of the land is cultivated. The principal products are rice, beans, wheat, barley, and ginseng. Gold, iron, copper, and coal are found, but not extensively mined. Trade with the interior is carried on by means of pack horses and porters.

Japan. Of what is the Empire of Japan composed? Compare the extent of the Japanese islands in latitude with that of the eastern coast of the United States. Compare their area with that of California (p. 153). What seas separate these islands from the mainland? Name the largest island; four other large islands.

The Japanese islands contain over fifty volcanoes, among them the famous Fujiyama. Earthquakes are very frequent. The surface is mountainous, and the rivers are generally mountain torrents.

REELING SILK, JAPAN.

In spite of the fact that much of the land is unfit for farming, agriculture is the chief occupation. The farming implements are very simple, but irrigating and fertilizing are well understood. Rice is the chief food crop. Mulberry trees are cultivated, and Japan, after China, is the world's greatest silk-producing country. Tea is grown, and the forests yield lumber, lacquer gum, and camphor — the last chiefly from Formosa. The bamboo is abundant, and is used for many purposes.

There are few sheep or cattle; hence little wool or leather is obtained, and dairy products are rare. But hogs and fowl are raised, and the Japanese fisheries are valuable.

The chief mineral products are silver, copper, coal, iron, and sulphur.

The Japanese produce wonderfully skillful and artistic handiwork. Japanese silk, embroidered goods, floor mats, metal work, lacquered ware, and pottery are now found in all European and American cities.

Many railroads have been built, and steam vessels are used for foreign trade, so that commerce is very active. The foreign commerce is large and increasing. The chief exports are silk, cotton yarn, coal, tea, and copper.

The Japanese are by far the most progressive of the Asiatic peoples. They are of mixed Mongol and Malay blood, small of stature, and very energetic. Until the middle of the nineteenth century they lived secluded from other nations. Then they invited American and European teachers into their country, sent their brightest youths to study in our cities, and established schools,

WEIGHING TEA LEAVES, JAPAN.

railroads, and telegraph systems. The emperor rules by the aid of a parliament consisting of two houses, the members of one being mostly nobles and the members of the other being elected by the people.

Education is almost universal, and newspapers are published in the larger cities. Most of the people are still Buddhists, dress in loose robes, with girdles and straw sandals, and follow the ancient customs of the country.

Tokyo, the capital, is a city of rapid growth, containing over a million people. The foreign quarter is much like a European city. *Yokohama*, its seaport, is the chief center of foreign commerce. *Osaka* and *Kyoto* are the seats of important manufactures.

Supplemental Work. Read chapters 2–10, "Carpenter's Geographical Reader, Asia."

The Philippine Islands. In what direction from Japan are the Philippine Islands? What waters surround them? Through how many degrees of latitude do they extend? Describe their climate. Name the chief island. What is the capital?

The Philippine Islands are a colonial possession of the United States, with an area greater than that of Colorado. There are about two thousand islands in the group, of which Luzon and Mindanao are much the largest. The bulk of the population lives in Luzon and the smaller islands just south of it. The people are mostly Malays, but there are many Chinese and a few Spaniards and Americans.

NATIVE BOAT, WITH OUTRIGGERS, PHILIPPINE ISLANDS.

The climate is warm, with a wet season between July and November. Much of the surface is covered with dense tropical forests of palms, bamboo, ebony, and teak. Most of the natives are civilized and are engaged in agriculture. A few tribes are in a savage state. The chief products are rice, sugar cane, manila hemp, cocoanuts, and tobacco.

Manila, in Luzon, is the capital and largest city. *Iloilo*, in Panay, and *Cebu*, on an island of the same name, are important ports.

The East Indies, or the Malay Archipelago. Name the largest islands of this group. Name the seas and straits between the islands. Describe the climate.

The surface of the East Indies is mountainous, and there are many active volcanoes. The fringe of lowland coast plain and the river flood plains are generally fertile. In the larger islands are dense forests.

The greater part of this group belongs to the Netherlands and is known as the Dutch East Indies. Most of the inhabitants are Malays, but there are many Chinese and a few Arabs. The Europeans, who are the ruling class, form only a small part of the population.

Java is by far the most important and most populous of the Dutch possessions. It is about as large as the state of New York, but contains several times as many people. It exports much cane sugar, and, after Brazil, more coffee than any other country in the world. Cinchona and tea are produced. *Batavia* is the capital and commercial center of the Dutch East Indies.

Sumatra produces coffee, black pepper, rice, and India rubber, and has mines of gold, coal, tin, and lead. **Banka** and **Billiton** supply much of the world's output of tin.

Borneo is a little larger than Texas. Some parts of its wooded interior have not yet been explored. Most of the inhabitants are Malays. The northern part belongs to Great Britain, the rest to the Netherlands. The chief products are timber, sago, rice, coffee, pepper, gutta-percha, tapioca, and tobacco.

Supplemental Work. Collect pictures and objects illustrating the customs and occupations of Asiatic peoples. Read chapters 22–35, "Carpenter's Geographical Reader, Australia," etc.

CORRELATIONS AND COMPARISONS

Extent. How does Eurasia compare in size with the other grand divisions? How does Asia? How does Europe? How do the two parts of the grand division compare with each other? With which of the other grand divisions is communication from Eurasia easiest? With which is it most important? Why?

Coast. Compare Arabia and Spain in size; in latitude; in surface; in climate. Compare the Italian and Indian peninsulas; the Grecian and Malay peninsulas. Compare Kamchatka and the Scandinavian peninsula in latitude, direction, surface, climate. Compare the Japanese and the British islands in position, latitude, size, climate. Are the seas of Europe or of Asia more inclosed? Name and locate the closed or nearly closed seas and gulfs of Eurasia; the open seas, gulfs, and bays.

Surface. Compare the European and Asiatic highlands in length, extent, height. In which of these divisions is there easier communication between different river systems? Why? Compare the Spanish and Balkan plateaus with the plateaus of Iran and Tibet in extent, height, and drainage. Compare the Pyrenees with the Caucasus in length and direction. Compare the Alps with the Himalayas; the Apennines with the Western Ghats. Compare the rivers of the northern slope, in Asia and in Europe, in length and usefulness. Compare the rivers of the great basin of interior drainage in the two divisions. Compare the rivers of the eastern and southern slopes of Asia with the European rivers flowing to the Black and Mediterranean seas. Compare the northern and the southern streams of Asia in extent of basin and volume of water. Explain these differences. Compare the lakes of Eurasia and North America. Study the map and the text of Eurasia for some examples of the effects of water erosion; of deposition; of glacial action.

Climate. Compare the heat belts of Eurasia and North America, and give some reasons for their similarity of position. Explain the regions of heavy rains in western Europe and in western North America. Explain the regions of moderately heavy rain in eastern North America and in eastern and southeastern Asia. Compare the regions of little or no rain in the two grand divisions; show that their causes are the same, and why their positions are different.

Life. Compare the maps of temperature, rainfall, and vegetation. Show that in Eurasia the absence of either heat or moisture in any region affects its vegetation. Find examples of forest-covered mountain regions. Why are the forests still found there? Locate some regions without forests from natural causes; some made so by man. Find some river valleys of Eurasia which are forest regions; find some which are grassy land. In what plains have the people reduced the forest area? What kinds of wild animals might be found in traveling from north to south through central Asia?

Man. Compare the population maps with the physical map, the heat and rainfall maps, and the vegetation map. Are the highlands or the lowlands of Eurasia generally more densely peopled? Why? Are the densely peopled regions mainly in very cold, in very hot, or in temperate regions? What two temperate regions, as a whole, are most sparsely populated? Compare the regions of little or no rain with the regions of sparse population, and explain their relations. Compare the civilizations of Europe and Asia in age; in rapidity of progress; in present condition. What races are represented in Europe? in Asia? What is the chief race in each? Where is the most numerous Aryan population of Asia? the most numerous population of the yellow race in Europe?

Industries. What are the chief agricultural regions of Europe? of Asia? Compare the chief agricultural products of Europe and Asia. Where are there herding regions in Europe? in Asia? Name some domesticated animals employed in one of the divisions of Eurasia, but not in the other. Compare the methods of forest preservation and forest destruction in America and various parts of Europe. Compare the kinds of wood obtained from Europe and from Asia. Compare the mineral products of western Europe and of southeastern Asia. What are the great mining countries of Eurasia? What are the chief minerals obtained in each? Compare the manufacturing methods employed in Europe and in North America; in Europe and in Asia. Compare the character of the chief European and Asiatic manufactured products. Where are the chief commercial nations of Europe? of Asia? Compare the facilities for commerce in Europe and in Asia. What are some of the effects of this difference upon the lives of the people? Give several routes by which goods may be taken from eastern Asia to western Europe.

Countries. Compare France and Germany in size, agricultural products, minerals, manufactures, people, religion, and government. Compare the German Empire and Austria-Hungary in size, products, people, and prosperity. Give reasons for some of the differences you mention. What are the Scandinavian countries? Name the Mediterranean countries. Give their common and distinctive characteristics. Compare Belgium and Holland. In what respects does Switzerland resemble each country on her borders? Name two empires each of which covers neighboring territory in Europe and Asia. Compare them in size, products, people, religion, government, and power. Compare China and Japan. Compare Persia and Arabia. Compare the Asiatic possessions of the British and the French; the British and the Dutch.

Cities. Give an account of a merchant's voyage from London to Bombay and back again, describing both cities and telling what goods he carries on each trip. Describe similarly a voyage from Paris to St. Petersburg; from Bombay to Hongkong; from Singapore to Liverpool; from Lisbon to Copenhagen; from Hamburg to Constantinople; from Marseilles to Yokohama; from Stockholm to Naples. Make several other such voyages between places which you yourself select.

Longitude 10 West 0 Longitude 10 East 20 from Greenwich
CAPE VERDE IS. (To Portugal)
MEDITERRANEAN SEA
LOWER EGYPT
NILE DELTA
Scale, 144 miles to one inch
MOROCCO
ALGERIA
TRIPOLI
LIBYAN DESERT
EGYPT
SAHARA
FRENCH WEST AFRICA
UPPER SENEGAL AND NIGER
NIGERIA
NORTHERN NIGERIA
SOKOTO
KAMERUN
GULF OF GUINEA
FRENCH CONGO
BELGIAN CONGO FREE STATE
ANGLO-EGYPTIAN SUDAN
ABYSSINIA
BRITISH EAST AFRICA PROTECTORATE
SOMALILAND (To Gr.Brit.)
GERMAN EAST AFRICA
PORTUGUESE EAST AFRICA
ANGOLA (To Portugal)
SOUTHWEST AFRICA
BECHUANALAND
TRANSVAAL
CAPE OF GOOD HOPE (CAPE COLONY)
MADAGASCAR
MAP OF AFRICA
Scale, 600 miles to one inch, same as the maps of North America, South America, Eurasia, and Australia
SCALE OF MILES
0 100 200 300 400 500 600 700 800 900 1000
The highlands above 2000 feet are shown in the buff tints, the lowlands above sea level in the green tints, and the lowlands below sea level in the purple tint. The submerged part of the continental plateau is shown in the light blue tint.
THE CHIEF POLITICAL DIVISIONS OF AFRICA
SCALE OF MILES
0 500 1000 1500
British
French
German
Portuguese
Italian
Spanish

AFRICA

Extent and Coast. By what is Africa separated from the rest of the Eastern Continent? What oceans border it? In what zones does it lie? What American city has about the latitude of the northern point of Africa? of the southern point? How does Africa rank among the grand divisions in size? (p. 153.) Compare its extent with that of North America.

How does Africa compare with the other grand divisions in regularity of coast line? What gulf is on the west coast? What two *bights*, or open bays? What two gulfs and strait are on the north? What gulf and channel are on the east? What strait connects the Gulf of Aden with the Red Sea? Name the capes at the northern, eastern, southern, and western extremities of Africa. Name another cape near the southern extremity. What large island is east of Africa? Is it a continental or an oceanic island? (§ 20.) Name some oceanic islands west of Africa (small map).

Surface. Review the lesson on the highlands of the world (§§ 22–24). What part of Africa is mostly highland? What part is mostly lowland?

Highlands. From the Red Sea to the southern Atlantic coast the southeastern half of Africa is a continuous plateau. It is highest in the northeast, but in general the margins are more elevated than the interior, and are about a mile high. From this great plateau three narrow tongues of highland extend far to the northwest — one along the Red Sea coast, one through the center of the grand division, and one along the Atlantic coast.

There are detached mountain ranges on the plateau, but none of any great length or elevation. In the eastern part of the plateau region are evidences of volcanic activity, and the frequent earthquakes indicate that the region may still be undergoing upheaval. Mount Kilimanjaro and Mount Kenia in this region are cones of extinct volcanoes nearly four miles high. They are among the few peaks of Africa that are lofty enough to be covered with perpetual snow.

The Atlas Mountains occupy a narrow highland in extreme northwestern Africa.

Lowlands. The greater part of northern Africa is a continuous lowland. In the south, while the interior is mostly highland, there is a narrow strip of lowland along either coast.

Climate. What part of Africa is always hot? (map, p. 21.) What parts have temperate winters and hot summers? What belt of calms crosses northern Africa? southern Africa? (§ 85.) How does this affect the rainfall of these regions? (§ 93.) What belt of calms sweeps northward and southward over central Africa? (§ 90.) How does this affect the rainfall of that region? At what season is the rain belt farthest south in Africa? farthest north? At what times of the year do the rainy and dry seasons occur in the different parts of central Africa?

Drainage. Which slope of Africa (Atlantic or Indian Ocean) contains the greatest rivers? Name five large river systems. Which of these rivers flow from the region of abundant rainfall? (map, p. 22.) In what lakes does the Nile rise? Name its chief branches.

What two great rivers flow into the Gulf of Guinea? What is the chief eastern branch of the Niger? What lakes are near the sources of the Kongo? How does the Kongo compare with the other rivers of Africa in number of tributaries? How does its basin compare with that of the Nile in size and rainfall?

What river of South Africa flows to the Atlantic Ocean? How does the climate of its valley resemble that of the Nile valley? What large river flows to the Indian Ocean? What large lake is tributary to the Zambezi?

What lake is between the central and western highland tongues? What river system is tributary to this lake? What small lake in southern Africa has no outlet?

Trace the continental divide of Africa, and describe the two chief slopes and each of the drainage basins.

The Kongo and the Niger carry about half the drainage waters of Africa. The Kongo ranks next to the Amazon in volume, among the world's great rivers. The Nile is one of the longest rivers in the world, but much of its basin is so dry that it ranks only fourth among African rivers in volume. The water which falls during the rainy season in equatorial Africa causes the lower Nile to overflow its banks, thus irrigating and fertilizing its flood plain through the arid region.

The rivers, where they descend from the plateau, are obstructed by cataracts which interrupt their navigation. The lowest cataracts of the Nile and of the Niger are more than 700 miles from the sea. But in the Kongo, cascades occur where it cuts through the western highland tongue, much nearer its mouth. The Zambezi and the Orange rivers have many falls and are not extensively navigated. The Victoria Falls of the Zambezi rival those of Niagara in grandeur.

AVENUE OF PALMS — NILE RIVER.

Lake Tchad has no outlet to the sea, and is gradually decreasing in size, though in times of prolonged rains it becomes larger temporarily. A western tributary of the Shari flows through a swampy region which drains both to the Shari and Lake Tchad and also to the sea through the Binue and the

Some Animals of Africa.

Niger. Near the southern edge of the Atlas highland are several deep depressions in the lowlands, called *shotts;* they contain salt lakes during part of the year.

Life. What animals and plants are peculiar to the African life region? (§107.) Where are the forests? (map, p. 24.) Where are the grass lands? Where are the deserts? What is the great northern desert region called? the southern desert region? (map, p. 140.)

More than a third of Africa consists of deserts. Some parts of these are covered with shifting sands and wind-formed dunes (§ 37), with here and there fertile oases. Other parts are stony and barren, and still others rough and mountainous. Date palms grow in the oases, and such other plants as thrust their roots deep down to the ground water. Along the edges of the deserts are plains where grow acacias and rough grasses like those of our own plateau region.

In the equatorial forests are sago and oil palms, mimosa and rubber trees, and other plants peculiar to this life region. In the coast marshes are mangrove jungles and enormous grasses resembling cane and bamboo.

More large wild animals are found in Africa than in any other of the grand divisions. Snakes and insects abound.

People. To what race do most of the people in central and southern Africa belong? (§ 119.) To what race do the people in northern Africa belong? (§ 115.) What parts of Africa have a dense or moderately dense population? (map, p. 28.) How does the distribution of people correspond with the distribution of rainfall? (map, p. 22.)

Few of the negro tribes in Africa have advanced to the stage of civilization, and many of them are still in the savage state. For many centuries negroes were carried from Africa into various countries as slaves. The barbarous tribes in central Africa still make slaves of the prisoners whom they capture in war, but the trade in slaves has been very largely suppressed.

The white peoples who occupy the countries bordering on the Mediterranean are chiefly Arabs, Berbers, and Jews. Many are quite dark-skinned. In most parts of Africa, especially near the coasts, Europeans have established settlements and colonies. In the south they have built towns and roads, and have introduced the arts of civilization.

Supplemental Work. Draw on a large scale a map of Africa, naming the chief natural features. Model Africa.

Read chapters 12, 20, 24, 27, 29, 34, 35, "Carpenter's Geographical Reader, Africa." Write a comparison between northern and southern Africa in climate, products, and inhabitants. Begin a scrapbook of pictures and interesting items about Africa.

ROAD TO THE PYRAMIDS.

COUNTRIES OF NORTHERN AFRICA

Egypt. What water boundaries has Egypt? What country is northwest? What river passes through Egypt? What ship canal is included within its limits? What desert occupies its western part?

The river Nile flows northward through Egypt, and most of the people live in its delta and its narrow, but fertile, flood plain. This plain is bordered by steep, rocky bluffs, beyond which stretches the desert. A great dam at Assuan and an artificial bar at Siut furnish a supply of water to irrigate the lower valley during the dry season.

INTERIOR OF HOUSE, ALGERIA.

Agriculture is the chief occupation, but the methods are very primitive; the soil is not even plowed, but the seeds are scattered, and then trampled in by oxen. The water supply is lifted from the river by wheels or pumps, and distributed by dikes and ditches. Wheat, corn, cotton, sugar cane, rice, and semitropical fruits are grown. Donkeys, oxen, camels, and sheep are raised.

There are but few manufactures except handmade embroideries, jewelry, and leather work. The Nile River and a railroad along its valley are the principal means of transportation. Cotton, cotton seed, and sugar are exported in exchange for cloth, timber, coal, and hardware.

By far the most important commercial route, however, is the ship canal, from Port Said to Suez, across the Isthmus of Suez, through which passes a large part of the commerce between Europe and Asia.

Most of the people are of mixed Arab and negro blood; but there are many Turks and a few Europeans. Mohammedanism is the prevailing religion.

The ruler, or *khedive*, of Egypt pays tribute to the Sultan of Turkey, but the government is controlled by Great Britain. South of Egypt is the large region called Anglo-Egyptian Sudan, under the joint control of Great Britain and Egypt.

Cairo, the capital, is the largest city of Africa. Near it are the great pyramids, built thousands of years ago when this region was the center of the learning and the civilization of the world. *Alexandria* is the chief seaport of Egypt.

The Barbary States. What four states occupy the Mediterranean coast west of Egypt? By what region are they bounded on the south? Which are traversed by the Atlas Mountains?

The eastern part of this region is too dry for agriculture except in occasional oases. In the western part, where the rainfall is greater, grain is grown on the plateaus, and tropical fruits on the lower lands. In much of this region, as in Egypt, the methods of agriculture are rude, and the crops are small. Mules, horses, camels, sheep, and goats are raised, and along the coast sponge fishing and coral fishing are important industries.

There is some hand manufacture of woolen and silk goods, shawls, carpets, felt, and leather.

Grain, vegetables, and fruits are the chief exports. Esparto grass used for making paper is also exported. Most of the desert carrying trade centers in the Barbary States.

The native peoples are chiefly Mohammedans. They include Berbers, who are mostly farmers; Arabs, who tend flocks and herds; and Moors, who live in the towns. The leading merchants and traders are Jews. There are also many negro slaves in Morocco and Tripoli. In Algeria and Tunis there are a considerable number of Europeans.

Tripoli is part of the Turkish Empire. The city of *Tripoli* is the capital. Its trade is largely in ostrich plumes, ivory, and slaves brought across the desert. **Morocco** is ruled by an absolute monarch called the *sultan*. *Tangier* is the chief port. *Morocco* and *Fez* are larger towns in the interior; the sultan resides part of the time in one and part of the time in the other. **Algeria** is a French colony. *Algiers* is the chief commercial city and seaport. At *Oran* are valuable marble quarries. *Biskra*, in a beautiful oasis on the edge of the desert, is the terminus of important caravan routes. The government of **Tunis** is nominally still in the hands of a native ruler called the *bey*, but a French *resident* really has most of the governing power. *Tunis*, the capital, is the largest city of the Barbary States.

The Sahara. Compare the Sahara with the United States in size.

The word *sahara* means "desert," and the region to which it is applied is the largest desert in the world. In this region there are many oases; some of them are very

CAMELS ON THE DESERT.

large and in them date palms, olive trees, and grain are grown. The region is very sparsely peopled by wandering tribes. The chief product is salt, most of which is bartered to the natives of central Africa. The greater part of the Sahara is claimed by France.

Supplemental Work. Read chapters 2–11, 13–17, "Carpenter's Geographical Reader, Africa."

CENTRAL AFRICA

Central Africa includes the region from the Sahara to the Zambezi River. Describe the surface and drainage of this region; the distribution of heat and moisture. Where are the forests? (map, p. 24.) Where are the prairies?

South of the Sahara is the fertile, grassy Sudan, beyond which is the region of equatorial forests.

The forests contain valuable woods, rubber-yielding vines, trees yielding gums from which varnish is made, the palm, from whose fruit is obtained palm oil used in making soap, and other useful plants. In these forests are herds of elephants, and in the rivers are hippopotamuses. The tusks and teeth of these animals are exported as ivory. In parts of the region the tsetse fly carries a disease often fatal to cattle; but throughout the upper meadow lands cattle and sheep may be raised, and bananas, corn, rice, cotton, tobacco, cacao, sugar, and, at higher elevations, wheat may be grown.

This region is the true home of the negro, and in it live most of the negroes of the world. The natives of the interior are generally more intelligent than those near the coast. They weave a cloth of palm fiber, make rude canoes, spears, and bows and arrows, although many use firearms and weapons obtained from white men. Some cultivate the soil; others are fishermen. In this region also live the pygmies, a dwarf people of the black race.

It is only recently that central Africa has been explored, but now five European nations claim nearly the whole of the region, — Great Britain, France, Germany, Portugal, and Italy (small map, p. 140). These claims have generally grown from a few trading settlements made along the coasts by white men. After the traders had secured a foothold, the home government sent out soldiers to protect the colony, and to extend its "sphere of influence" into the interior.

IVORY CARRIERS, KONGO STATE.

The exports from most of these possessions are similar, and consist chiefly of palm oil, rubber, ivory, varnish gums, hides, cabinet woods, and some cotton and coffee.

The most important districts on the west coast are **Sierra Leone** (British) and **Liberia** (a negro republic), — both founded as a refuge for negroes rescued from slavery, — British **Nigeria**, German **Kamerun**, **French Kongo**, and Portuguese **Angola.**

Much of the interior is occupied by the **Kongo State** established by the European powers for purposes of trade. It is, however, practically under the control of Belgium, and is governed as a colonial possession of that country. Trade is open to all nations on the same conditions. The chief exports are rubber and ivory.

NATIVE STORE, WEST COAST.

Eritrea, on the Red Sea, and the east coast of **Somaliland** are claimed by Italy, and the rest of the east coast is claimed by Great Britain, Germany, and Portugal. **Abyssinia** is a native kingdom. The Abyssinians raise horses, cattle, and camels, and produce woven

fabrics and leather goods. Coffee, skins, and ivory are the chief exports.

The island of **Zanzibar,** an important post, is ruled by a native sultan under British control. Cloves and central African products are exported.

The island of **Madagascar** belongs to France. The natives in the west are black savages; those in the east are partly civilized Malays. The French are now building roads and opening up the mineral and agricultural resources of the country.

Mauritius, a British colony, and **Reunion,** a French possession, produce large quantities of sugar, also aloe fiber, cocoanut oil, vanila, and rum.

Supplemental Work. Read chapters 18, 19, 21, 25, 26, 28, 30–33, 36–39, "Carpenter's Geographical Reader, Africa."

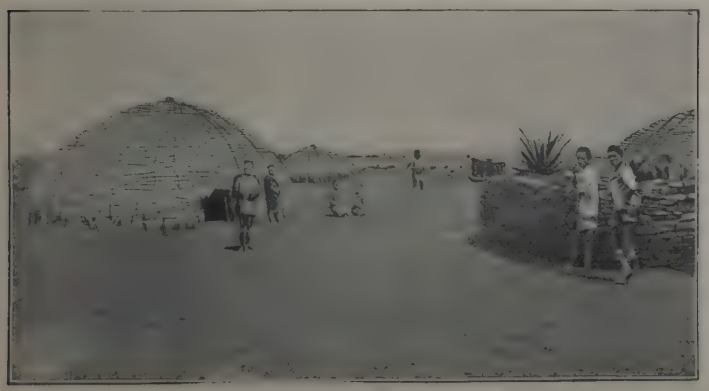
SOUTH AFRICA

South Africa includes the region south of the Zambezi River. The surface rises rapidly by a series of terraces from a narrow coast plain to a gently undulating, treeless plateau, called the *veldt.* On the eastern and southern slopes there is sufficient rainfall to support forests of palm, ebony, and rubber trees. Olives, cypresses, and evergreens flourish in the south. The eastern part of the plateau is excellent pasture land, but the western portion is a desert.

The lowland slopes are well adapted for the cultivation of sugar cane, coffee, cotton, and wheat, but the uplands are better adapted for herding, and vast numbers of sheep, cattle, ostriches, and goats are raised. In a small region between the Orange and Vaal rivers, near their junction, are the chief diamond mines of the world; and north of the Vaal are extensive gold mines.

The largest and most valuable part of South Africa belongs to Great Britain. The German territory on the west coast is too dry for agriculture, but the Portuguese colonies on the east produce some coffee and rubber, besides various ores.

Cape of Good Hope, usually called **Cape Colony,** is in the extreme south, and north of it are the **Orange Free State** and **The Transvaal,** which were recently annexed by Great Britain. These, with **Natal,** are the most progressive countries of Africa. Many miles of railroad have been built, and the towns have well-paved streets, electric lights, and street cars. These four provinces form a federated government known as **The Union of South Africa.** The governor-general of The Union is appointed by the British sovereign, and each province also has its own local government. The large region called **Rhodesia,** and the **Nyassaland Protectorate** are both being rapidly settled by the British.



KAFIR NATIVE HUTS, SOUTH AFRICA.

The negro natives of this part of South Africa have either been pushed back into the interior or have partly adopted the ways of the white men and work for them as servants and laborers.

DIAMOND WASHERS, KIMBERLEY.

The Dutch made the first coast settlements at the southern extremity of Africa, but the British took possession of them. Many of the Dutch farmers, or Boers, not liking British rule, moved northward and founded the two states which later were also annexed by Great Britain.

Cape Town is the capital and chief port of Cape of Good Hope, and is also the legislative capital of The Union. The exports are gold, diamonds, wool, feathers, goats' hair, hides, and copper ore. *Port Elizabeth* also has an active commerce. *Kimberley* is the center of the diamond-mining region.

Pretoria, the capital of The Transvaal, is also the executive capital of The Union. *Johannesburg* is the center of the gold-mining region. *Bloemfontein* is the capital of Orange Free State. These places are connected with the coast by railroad. The exports of these provinces are similar to those of Cape of Good Hope.

Durban is the seaport and largest town of Natal.

Supplemental Work. Read chapters 40–50, "Carpenter's Geographical Reader, Africa."

TOPICS ON AFRICA

I. PHYSICAL FEATURES. Extent: latitude; longitude. Surface: distribution of highlands and lowlands. Drainage: continental divide; rivers — sources, mouths, size, obstructions, usefulness; lakes. Climate: heat belts; winds; distribution and causes of rainfall.

II. LIFE. Vegetable: distribution; reasons; peculiar plants. Animals. Man: distribution of races; distribution and causes of density.

III. PRODUCTS. Vegetable; animal; mineral.

IV. COUNTRIES. European colonies. Native states: dependent; independent.

POLITICAL AND PHYSICAL
MAP OF
AUSTRALIA
AND THE
ISLANDS OF THE PACIFIC
Scale, 600 miles to one inch same as the maps of North America, South America, Eurasia, and Africa
SCALE OF MILES
0 100 200 300 400 500 600 700 800 900 1000
The highlands above 2000 feet are shown in the buff tints, the lowlands in the green tints, and the submerged part of the continental plateau in the light blue tint.
HAWAIIAN ISLANDS
(To the United States)
Scale, 133 miles to one inch, same as Northern Section of the United States
SCALE OF MILES
0 50 100
AUSTRALIA
NORTHERN TERRITORY
WESTERN AUSTRALIA
SOUTH AUSTRALIA
NEW SOUTH WALES
QUEENSLAND
VICTORIA
TASMANIA
NEW ZEALAND
NORTH ISLAND
SOUTH ISLAND
PACIFIC OCEAN
INDIAN OCEAN
CORAL SEA
TIMOR SEA
ARAFURA SEA
BANDA SEA
JAVA SEA
CELEBES SEA
SULU SEA
CHINA SEA
PHILIPPINE ISLANDS
NEW GUINEA
BORNEO
SUMATRA
JAVA
CELEBES
SIAM
CAROLINE ISLANDS
(To Germany)
MARSHALL IS.
(To Germany)
BISMARCK ARCHIPELAGO
(To Germany)
SOLOMON IS.
NEW HEBRIDES
NEW CALEDONIA
(To France)
FIJI IS.
(To Gr. Brit.)
SAMOA IS.
(To Ger. / To U.S.)
TONGA OR FRIENDLY IS.
(To Gt. Brit.)
GILBERT IS.
(To Gr. Brit.)
ELLICE IS.
(To Gr. Brit.)
NORFOLK I.
LORD HOWE I.
KERMADEC IS.
(To Gr. Brit.)
CHATHAM IS.
To Gr Brit.
Longitude from Greenwich
BRADLEY & HOATES, ENGR'S, N.Y.

AUSTRALIA AND THE PACIFIC ISLANDS

EUCALYPTUS TREES, AUSTRALIA.

AUSTRALIA

Extent and Coast Line. What tropic crosses Australia? Is any other continent wholly in the southern hemisphere? How does Australia rank among the grand divisions in size? Compare its area with that of the United States (p. 153). Name three indentations of the coast. Name the largest island to the north; to the south. What obstacle to navigation extends along the northeast coast?

Surface. Compare Australia with the other grand divisions in the proportion of lowland and of highland. In what part of Australia is the greatest extent of highland? Locate the other highlands of Australia.

In general, the surface of Australia is flat. Most of the eastern half is a low plain, which rises eastward to a narrow rim of highland. The eastern slope of this highland is steep and rugged. Its loftiest points are about one and one half miles high, but in general it has less than half that elevation. The western half of Australia is a low plateau, which in places rises slightly above the limit of lowland.

Climate. What heat belt embraces most of Australia? (map, p. 21.) What part is always hot? What part is always temperate? In what season does Christmas occur in Australia? Why? In what wind belts does Australia lie? (map, p. 22.) What parts receive a moderately heavy rainfall? What part receives light rains or little or no rain? What calms lie over central Australia part of the year?

Most of Australia is deficient in rainfall. The equatorial rain belt brings copious rains in spring and summer to the north coast, but the tropical calms make these seasons dry (§ 93) on the south coast. In winter the tropical calms lie farther north and the prevailing westerly winds bring rain to the southwest, while the north coast is dry. The southeast trades yield ample moisture at all seasons on the steep eastern slope; but much of the interior receives little rain and is a desert.

Drainage. What is the largest river system in Australia? Where are there other streams? Show the relation between the location of the streams and the distribution of the rainfall. Where are there lakes?

The Murray River and its tributary the Darling are each over 1000 miles long, but their supply of water comes mainly from the eastern highlands, and they decrease in volume as they advance. For about half the year they are navigable for small steamers. There are many short but beautiful streams along the east and north coasts. In the interior the stream beds are dry except after the infrequent showers. Most of them end in salt lakes or marshes.

Vegetable and Animal Life. What parts of Australia are forest-covered? (map, p. 24.) What parts are grassy lands? What parts are deserts? Review the lesson on the Australian life region (§ 105). Describe some of the characteristic forms of vegetable and animal life, and tell wherein the Australian life region differs from all others.

The hot, well-watered, north coast has forests as luxuriant as those of the Amazon and Kongo basins. From these, cabinet woods are obtained, and farther south on the coast are pines, cedars, and eucalyptus or gum trees. Most of the interior, however, is covered with a "scrub" of reedlike grasses and, in the drier regions, with an almost impenetrable "bush" of thorny acacias.

Many of the smaller animals live in the forest regions, but the great kangaroos, the ostrichlike cassowaries, and the emus live on the open plains.

People. Australia is the most thinly settled of the continents. Three fourths of all the people live in the extreme southeastern portion; much of the western portion is but partly explored, and is practically uninhabited.

When white men first settled in Australia, a little more than a hundred years ago, the only inhabitants were tribes of black-skinned savages. Of these but few remain. Most of the present inhabitants are emigrants

AUSTRALIAN NATIVES.

from the British Isles or their descendants, but a few are from other parts of Europe or from Asia.

The British emigrants brought the first sheep and cattle to Australia and started the industry of stock raising. Australia has now become the greatest of wool-producing, and one of the greatest meat-exporting, countries in the world. Most of the land used by man in Australia is devoted to sheep farms and cattle ranges. Agriculture is carried on in the moist coast region in the east and south, and some wheat is exported, but the combined value of all crops raised is only half that of the wool and meat.

GOLD MINE, AUSTRALIA.

Gold, silver, coal, copper, and tin are mined principally on the inner slope of the eastern highland. Nearly one fourth of the world's supply of gold comes from Australia, yet the yearly product from all the mines is but one fifth as valuable as the pastoral and farm products.

More than half the people live in cities, and manufacturing is an important industry; however, much cloth, machinery, and general manufactures are imported. Most of the foreign trade is with Great Britain and her other possessions. There is an extensive system of railroads in the southeast, and the continent is connected with Eurasia, Africa, and America by telegraph cables.

Government and Divisions. Australia belongs to Great Britain; its five states, with Tasmania, form the *Commonwealth of Australia.* The Territory of Papua (British New Guinea) is a dependency of the commonwealth. The governor-general is appointed by the king, and there is a parliament to which the people elect members. Name the states of Australia. *Melbourne* is the temporary capital of the commonwealth.

Victoria is a great agricultural and gold-mining state, and has also large pastoral and manufacturing interests. The chief exports are wool, gold, animal products, and wheat. *Melbourne*, the capital, is the largest city in Australia and the chief port of the state. *Ballarat* is in the gold fields.

GEYSER TERRACE, NEW ZEALAND.

New South Wales, the oldest and wealthiest state, supplies one half of the wool product of Australia, besides much wheat, corn, sugar cane, and wine, and many oranges. Gold, silver, and coal are extensively mined. *Sydney*, its capital, is but little smaller than Melbourne, and has a much larger foreign commerce.

Nearly half the surface of **Queensland** is forest-covered. Grain and sugar cane are the chief crops. In the interior many sheep and cattle are pastured. Much gold and some coal are mined. The population includes some Chinese and East Indians. The chief exports are gold, preserved and frozen meats, wool, sugar, and hides. *Brisbane* is the capital.

South Australia has rich copper mines, and raises important crops of wheat and grapes. The chief exports are wool, wheat, flour, and copper. *Adelaide*, the capital, is the only large city.

The coast regions of **Western Australia** are less fertile than the surrounding country nearer the sources of the rivers. Gold is the most valuable export, but much timber and wool are also exported. *Perth* is the chief city and the capital.

Supplemental Work. Draw and model Australia. Read chapters 1–9, "Carpenter's Geographical Reader, Australia," etc.

ISLAND GROUPS

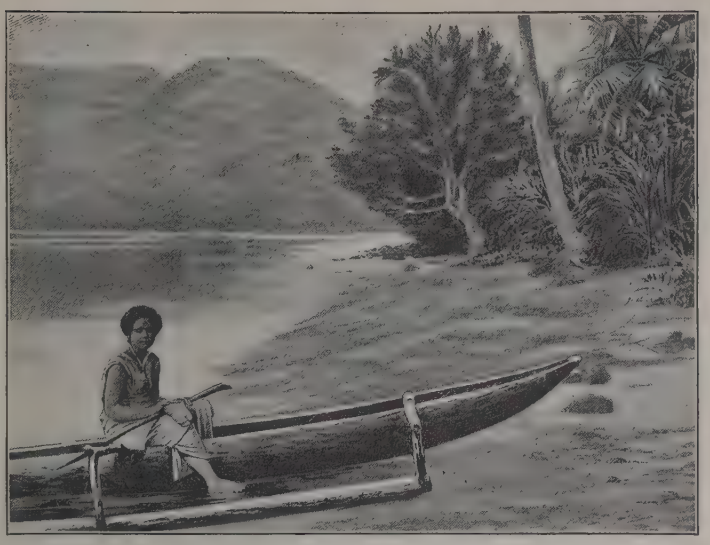
Tasmania is surrounded by many small islands, and its coast has many bays. It is called the "Switzerland of the South," because of its mountainous surface. Its climate is more equable than that of Australia.

The plant and animal forms are Australian. The mountains are thickly forested, and the flood plains are fertile.

The island is part of the Commonwealth of Australia. It is studded with sheep farms. Fresh and preserved fruits are shipped to Australia and England. Copper, tin, silver, and gold are mined for export, and coal for domestic use.

Hobart, the capital, is beautifully situated, and is a summer resort for people from Australia.

New Zealand. Name the islands of this group. What strait separates the two largest?



Native Samoan Girl and Boat.

Both of the large islands are mountainous, with snow-clad peaks two miles high. North Island contains active volcanoes and geysers. South Island is noted for its glaciers, glacial lakes, and glacier-carved fiords, resembling those of Norway. The climate is mild and moist.

The vegetation is peculiar, but resembles most nearly that of Australia. The mountains are forest-covered, and the plains are clothed with grass. A large tree called the kauri pine furnishes fine timber for export. There are few native animals, but New Zealand is the home of the kiwi (p. 25), a singular bird without wings. The few natives, called Maoris, are of Malay origin.

New Zealand was settled by Englishmen, and is a part of the British Empire. Sheep and cattle raising, farming, and the mining of gold, coal, and fossil kauri gum are the principal occupations. The chief exports are wool, frozen and preserved meats, gold, and dairy products, which are sent chiefly to England. *Wellington*, the capital; *Auckland*, on North Island; and *Dunedin*, on South Island, are the chief cities.

Australian East Indies. What is the largest island north of Australia? Name the principal islands west of New Guinea included in the Australian life region (map, p. 25). Name the seas between them. To whom do most of these islands belong? To whom does part of Timor belong? Among what three nations is New Guinea divided? Name two groups east of New Guinea. To what nation do most of these islands belong?

Fishing Boat, Hawaiian Islands.

The larger islands of the Australian East Indies contain volcanoes and are fringed with coral reefs, but there are many small coral islands and atolls. The climate is hot and moist. The products are tropical fruits and vegetables, spices, sugar, cotton, pearls, and copra, or the dried meat of cocoanuts. Copra is extensively exported to be used in making cocoanut oil.

Other Pacific Islands. Where are the Fiji Islands? What groups are between them and Australia? What groups east of them? To whom do the Fiji Islands belong?

Scattered through the western Pacific are many clusters of small volcanic and coral islands. The vegetation consists of cocoanut palms, bananas, breadfruit trees, a palm called the "screw pine," yams, and sugar cane. The natives are chiefly of the Malay race, somewhat civilized by contact with European and American settlers.

The Fiji Islands are volcanic. They contain sugar plantations, and export sugar, fruits, and copra to Australia and New Zealand.

The Samoa Islands are mountainous, and are occasionally visited by earthquakes. They are well watered, well forested, and fertile, and export copra. The natives are partly civilized. **Savaii** and **Upolu** belong to Germany. **Tutuila** and several smaller islands are owned by the United States.

The Hawaiian Islands lie in the north tropical Pacific about one third the distance from San Francisco to Sydney. Hawaii, the largest island, is about the size of Connecticut, and contains active volcanoes. All the islands are volcanic and mountainous. The climate is warm and equable, with ample rainfall on the northeast or windward slopes.

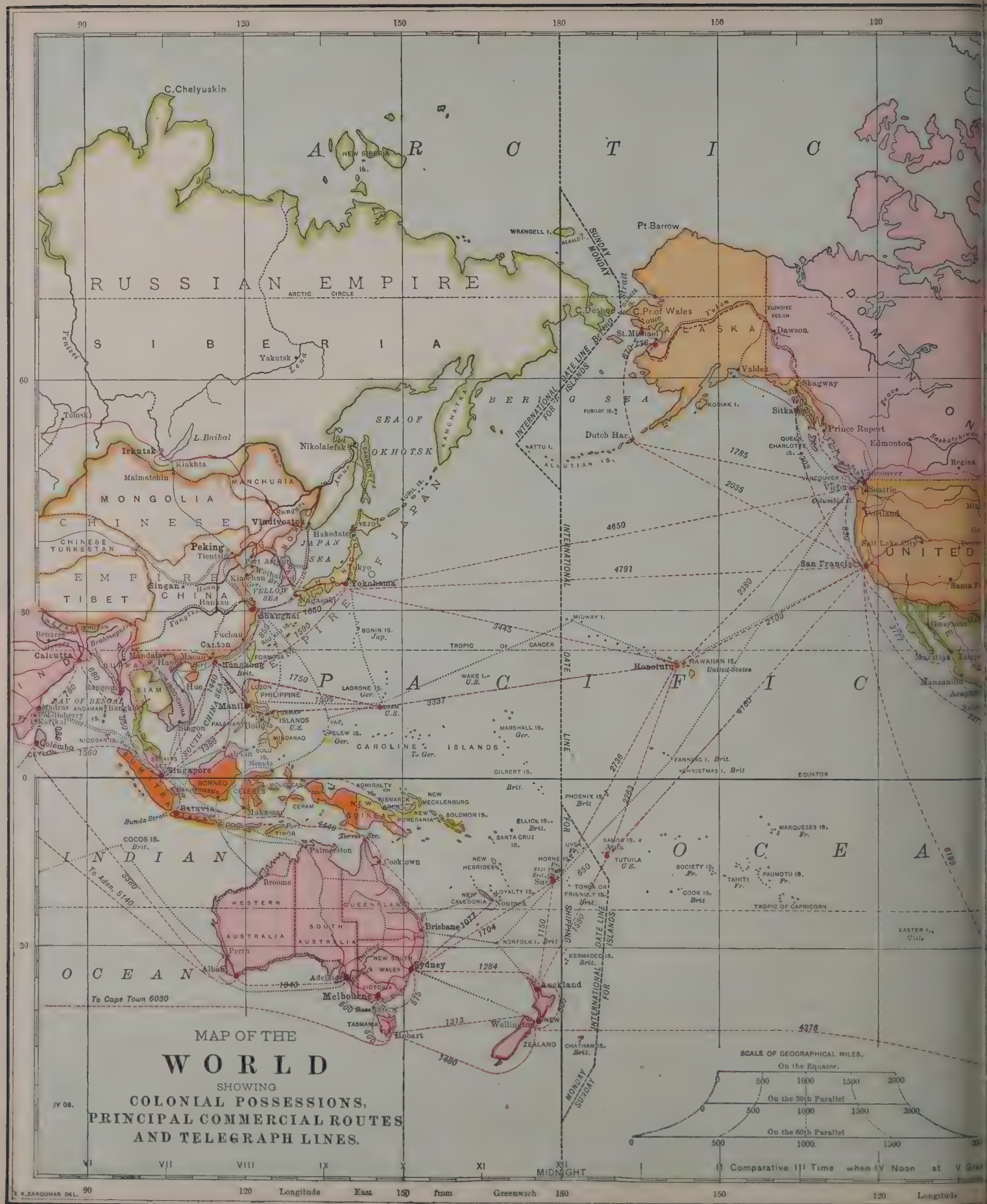
These slopes bear a dense tropical vegetation, with forests of cocoanut palms, candle nut, screw pine, and other trees, as well as such plants as the breadfruit, banana, and taro.

Sugar cane is extensively cultivated, and is the chief crop. Rice and coffee are also raised.

About one fourth of the people are natives called Hawaiians; the remainder are chiefly Japanese, Chinese, and Portuguese laborers, but there are also some Americans. Since 1900 the group has been a territory of the United States.

Honolulu is the capital and largest city. *Hilo* is the largest city on the island of Hawaii.

Supplemental Work. Read Chapters 10–13, 16–21, "Carpenter's Geographical Reader, Australia," etc.


C.Chelyuskin
A R C T I C
NEW SIBERIA IS.
RUSSIAN EMPIRE
ARCTIC CIRCLE
S I B E R I A
Yakutsk
WRANGELL I.
Pt.Barrow
SUNDAY
MONDAY
C.Deshnef
C.Prof Wales
St.Michael
A L A S K A
Dawson
Valdez
Skagway
Sitka
Prince Rupert
Edmonton
Regina
Vancouver
Seattle
Portland
San Francis
Santa Fe
UNITED
Tomsk
L.Baikal
Irkutsk
Kiakhta
Maimatchin
MONGOLIA
MANCHURIA
Nikolaiefsk
SEA OF OKHOTSK
BERING SEA
KAMCHATKA
JAPAN
Dutch Har.
PRIBILOF IS.
KODIAK I.
ALEUTIAN IS.
SATTU I.
Vladivostok
Hakodate
YEZO
JAPAN SEA
Tokyo
Yokohama
Nagasaki
Peking
Tientsin
CHINESE EMPIRE
CHINESE TURKESTAN
TIBET
Singan
CHINA
YELLOW SEA
Shanghai
Fuchau
Canton
Macao
Hongkong
Hue
Saigon
Manila
LUZON
PHILIPPINE ISLANDS
SAMAR
LEYTE
MINDANAO
SULU IS.
Mindoro
PALAWAN
Calcutta
Benares
Brahmaputra
Mandalay
Rangoon
BAY OF BENGAL
Madras
Bangkok
Pondicherry
Karikal
Colombo
CEYLON
ANDAMAN IS.
NICOBAR IS.
SIAM
STRAITS SET.
Singapore
SUMATRA
BORNEO
CELEBES
MOLUCCAS
Batavia
Sunda Strait
Makassar
CERAM
TIMOR
Torres Str.
Port Darwin
Palmerston
Cooktown
Broome
COCOS IS.
Brit.
INDIAN OCEAN
To Aden, 5140
To Cape Town 6030
WESTERN AUSTRALIA
SOUTH AUSTRALIA
QUEENSLAND
NEW SOUTH WALES
VICTORIA
Perth
Albany
Adelaide
Melbourne
Sydney
Brisbane
Hobart
TASMANIA
Bass Str.
NEW GUINEA
NEW BRITAIN
NEW MECKLENBURG
NEW POMERANIA
BISMARCK ARCH.
ADMIRALTY IS.
SOLOMON IS.
ELLICE IS. Brit.
SANTA CRUZ IS.
NEW HEBRIDES
NEW CALEDONIA
Noumea
LOYALTY IS.
HORNE IS.
FIJI IS. Brit.
Suva
TONGA OR FRIENDLY IS. Brit.
NORFOLK I. Brit.
KERMADEC IS. Brit.
Auckland
NEW ZEALAND
Wellington
CHATHAM IS. Brit.
PHOENIX IS. Brit.
SAMOA IS. Brit.
Apia
TUTUILA U.S.
UVEA
SOCIETY IS. Fr.
TAHITI Fr.
PAUMOTU IS. Fr.
COOK IS. Brit.
MARQUESES IS. Fr.
EASTER I. Chile
TROPIC OF CAPRICORN
EQUATOR
FANNING I. Brit.
CHRISTMAS I. Brit
GILBERT IS.
Brit.
MARSHALL IS. Ger.
CAROLINE ISLANDS
To Ger.
PELEW IS. Ger.
YAP.
GUAM U.S.
LADRONE IS. Ger.
WAKE I. U.S.
MIDWAY I.
BONIN IS. Jap.
HAWAIIAN IS. United States
Honolulu
TROPIC OF CANCER
P A C I F I C
O C E A N
INTERNATIONAL DATE LINE
INTERNATIONAL DATE LINE FOR ISLANDS
SHIPPING DATE LINE
Behring Str.
Yukon
Mackenzie
Peace
Saskatchewan
Columbia R.
Colorado
Rio Grande
Yangtse
Irrawaddy
Ganges
Indus
Tarim
Amur
Lena
Yenisei
Sungari
Hoang-ho
Mekong
Menam
Salt Lake City
Manzanillo
Acapulco
Mazatlan
Guaymas
Salina Cruz
KLONDIKE REGION
QUEEN CHARLOTTE IS.
VANCOUVER I.
1795
2035
4650
4791
2380
2700
3425
3337
1750
1505
1560
1360
1386
1650
1590
1700
2736
2263
4700
3777
6199
4376
1313
1380
1284
1704
1077
1040
1150
1560
650
600
576
5140
6030
6370
4240
780
680
550
360
MAP OF THE
WORLD
SHOWING
COLONIAL POSSESSIONS,
PRINCIPAL COMMERCIAL ROUTES
AND TELEGRAPH LINES.
JV 08.
SCALE OF GEOGRAPHICAL MILES.
On the Equator.
On the 30th Parallel
On the 60th Parallel
0 500 1000 1500 2000
MIDNIGHT
Comparative Time when Noon at
E.V.EARQUHAR DEL.
Longitude East from Greenwich
Longitude

SPITZBERGEN
GREENLAND
BAFFIN BAY
ARCTIC OCEAN
NOVAYA ZEMBLA
Upernavik
Jacobshavn
DISCO I.
Davis Strait
Godthaab
Hudson Strait
C. Farewell
JAN MAYEN I.
Hammerfest
North C.
Vardö
LOFODEN IS.
ARCTIC CIRCLE
ICELAND
Reikiavik
FARO IS. Den.
Trondhjem
Bergen
Christiania
Stockholm
Archangel
White Sea
Dwina
SIBERIA
RUSSIAN EMPIRE
St. Petersburg
Perm
Nizhni Novgorod
Moscow
Riga
Copenhagen
Omsk
Irtish
Orenburg
Volga
Caspian Sea
Astrakhan
Aral
RUSSIAN TURKESTAN
Tashkend
Khiva
Bokhara
Kashgar
Yarkand
Kabul
Herat
AFGHANISTAN
Kandahar
TIBET
Khelat
Delhi
Karachi
INDIA
Calcutta
Bombay
Madras
Pondicherry
Karikal
CEYLON
Colombo
LACCADIVE IS. Brit.
MALDIVE IS. Brit.
EQUATOR
ARABIAN SEA
Goa Port.
Mangalore
Calicut
CHAGOS IS. Brit.
SEYCHELLES Brit.
Mombasa
Zanzibar
Mozambique
Tamatave
MADAGASCAR
MAURITIUS
REUNION
ARBOR BUEZ
INDIAN OCEAN
To Albany 6140
To Melbourne 6030
To Adelaide 8280
2080
2130
1640
1920
2520
1480
2400
490
2350
Dunban
Port Elizabeth
Cape Town
Cape of Good Hope
TROPIC OF CAPRICORN
ST. HELENA Brit.
ASCENSION I. Brit.
TRISTAN DA CUNHA Brit.
Walfisch Bay
Johannesburg
Kimberley
Port Nolloth
CAPE COLONY
Lourenco Marquez
GERMAN SOUTH WEST AFRICA
Buluwayo
Beira
Inhambane
Mozambique
PORT. EAST AFRICA
Victoria
BRITISH EAST AFRICA
GERMAN EAST AFRICA
ABYSSINIA
Massaua
Aden
Hodeida
Mocha
Socotra
Muscat
Gulf of Aden
Red Sea
Suez Canal
Port Said
Suez
Jerusalem
Cairo
Alexandria
EGYPT
ARABIA
Bagdad
Teheran
PERSIA
Ispahan
Tabriz
Baku
Caspian Sea
Constantinople
BLACK SEA
Smyrna
Aegean Sea
Dardanelles
Sea of Marmora
Odessa
Don
Crimea
Sebastopol
Vienna
Budapest
Munich
Berlin
Warsaw
Prague
AUSTRIA HUNGARY
GERMANY
Hamburg
Frankfort
Cologne
Dresden
Breslau
Leipzig
Danube
Black Forest
Rhine
Elbe
Oder
Vistula
Gulf Bothnia
SWEDEN
NORWAY
Stockholm
Gothenburg
Christiania
Copenhagen
Baltic Sea
North Sea
Dublin
Glasgow
Edinburgh
Liverpool
Queenstown
London
Southampton
Havre
Paris
Bordeaux
Marseilles
Nice
Corsica
Rome
Naples
Sardinia
Sicily
Malta
Cyprus
Crete
Tripoli
Tunis
Algiers
Bizerta
Oran
Gibraltar
Madrid
Lisbon
Cadiz
Tangier
Fez
Morocco
Rio de Oro
TROPIC OF CANCER
SAHARA
ALGERIA
TRIPOLI
MOROCCO
SPAIN
PORTUGAL
BRITISH ISLES
FRANCE
Azores Port.
Madeira Is. Port.
Canary Is. Span.
Cape Verde Is. Port.
St. Thomas Port. Annobon Spain
Fernando Po Spain
Bathurst
Freetown
Monrovia
Timbuktu
St. Louis
SENEGAL
GAMBIA
SUDAN
Omdurman
Khartum
Kuka
Sokoto
NIGERIA
Lagos
CAMEROON
Duea
Libreville
FRENCH KONGO
KONGO STATE
Matadi
Loanda
ANGOLA
Benguela
Mossamedes
Blantyre
Nyassa
Kongo
Niger
Senegal
Gambia
Volta
Benue
Zambesi
Limpopo
Orange
Victoria Falls
Lake Tanganyika
Lake Nyassa
Lake Victoria
Lake Chad
Lake Tchad
Cape Verde
Sierra Leone
Liberia
Ivory Coast
Gold Coast
Togoland
Dahomey
Lagos
Cameroon
Gaboon
Congo
Angola
Benguela
Mossamedes
Walfisch Bay
Orange
Kimberley
Johannesburg
Buluwayo
Beira
Inhambane
Mozambique
Zanzibar
Mombasa
Victoria
Lake Victoria
Lake Tanganyika
Lake Nyassa
Lake Chad
Lake Tchad
Nile
Suez Canal
Red Sea
Gulf of Aden
Aden
Hodeida
Mocha
Socotra
Muscat
Gulf of Oman
Persian Gulf
Bagdad
Teheran
Ispahan
Tabriz
Baku
Caspian Sea
Constantinople
Smyrna
Aegean Sea
Dardanelles
Sea of Marmora
Black Sea
Odessa
Crimea
Sebastopol
Vienna
Budapest
Munich
Berlin
Warsaw
Prague
Hamburg
Frankfort
Cologne
Dresden
Breslau
Leipzig
Danube
Black Forest
Rhine
Elbe
Oder
Vistula
Gulf Bothnia

CORRELATIONS AND COMPARISONS

Physical Features. What is the earth's size? shape? What are the movements of the earth? What are the effects of these movements on the distribution of light? of heat? On the circulation of the air? of the ocean? On the tides? Compare the northern and southern hemispheres in their proportions of land and water.

Make a list of the world's great lowlands, and tell of each its climate, products, the nations which inhabit it. Make a list of the world's great plateaus, and tell of each its general elevation, climate, and products, and the nations which occupy it. Make a list of the world's great mountain systems and compare them in height; continuity; the number and height of their mountain peaks.

Give instances from various countries of movements of the earth's crust; of water erosion; of deposition; of the work of winds on surface forms. Mention some places where cataracts occur. Where are there continental glaciers? valley glaciers? evidences of former glaciers?

Name the chief rivers draining the Atlantic-Arctic slope in Eurasia; North America; Africa; South America. Name the chief rivers draining the Pacific and Indian Ocean slope in Africa; Eurasia; Australia; America. Make a list of the world's great lake regions. Tell of each the names, outlets, and uses of the chief lakes.

Name the world's great seas and bays; important isthmuses; straits; peninsulas; islands. Tell of each island or island group what you know of its origin, climate, and surface.

Climate. Describe and account for the trade winds; equatorial calms; tropical calms; prevailing westerly winds; monsoons. Why do the belts of winds and calms move northward and southward during the year? What is the effect of this movement? Describe cyclones.

Make a list of the regions of heavy rainfall, and try to account for the existence of each. Locate the largest regions of moderately heavy rain. Compare the positions of the areas of interior drainage in the northern and southern hemispheres; in the two northern grand divisions; in the three southern grand divisions. Compare the positions of the rainless regions of the world; of the desert regions. Compare the maps on pp. 22 and 24; what are the chief farming regions of the world? What great regions suited by climate for farming are still forest-covered? Where are there great herding regions?

Life. Compare the northern and southern hemispheres in the peculiarity of their life forms. Name the great life regions. In which are the life forms most peculiar? Which two regions are most nearly alike in life forms? Which region is nearly identical with a continent? What regions cover parts of two grand divisions; only part of a grand division? Locate and account for three transitional regions. Which grand division contains life forms belonging to three different regions? Describe the life forms, both animal and vegetable, of South America; North America; Eurasia; Africa; Australia.

Man. What is meant by savagery? barbarism? civilization? Compare the civilization of Europe with that of Asia. Describe its spread over North America, South America, Africa, and Australia; and describe its condition in each of these grand divisions. What parts of the world are not yet explored? not yet civilized?

Is population denser in the eastern or in the western hemisphere? in the northern or in the southern? Explain the locations of the most densely peopled regions of North America; of Eurasia. In what regions is sparseness of population due to cold? to little moisture and vegetation? to much moisture and vegetation?

Make a list of the races of man. Tell of each where it is found; its advancement; the chief nations representing it.

Agriculture and Herding. What are the world's great wheat-producing regions? In what respects are they similar? What regions produce rice? corn? tea? cotton? flax? Name some fruits which enter into the world's trade, and tell where each is grown. Where are cattle, hogs, and sheep raised? Name some regions which export food. Why? Name some which import food. Why? What do they exchange for the imported food?

Fishing. Make a list of some of the best ocean fishing grounds. What kind of fish are caught in each? Name waters famous for oysters; salmon; sponges; pearls; coral.

Lumbering. Locate some of the world's great lumbering regions. Make a list of useful forest products; tell where each is obtained, and how it is used.

Mining. How was coal formed? How is it mined? Locate the world's great coal-mining regions; regions which export coal; regions which import it. Where are the world's great petroleum regions? What mineral ranks next to coal in importance? How is it mined? Where is it produced? manufactured? Why is it important to find coal and iron near each other? When both are not found in the same region, which is usually transported to the other? Name some cities which manufacture iron and steel. Make a list of other mineral products, and tell about their occurrence, mining, and uses.

Manufacture. In what two ways may manufacturing be done? Where do primitive methods prevail? Where do modern methods prevail? Compare these regions with those of dense population; of iron and coal production.

Commerce. Define foreign commerce; domestic commerce. Where are railroads numerous? few? Give instances of the influence of surface forms upon railroad routes; of great natural obstacles overcome in building railroads. For what purposes are canals better than railways? Locate some canals and show why they are useful. Tell what you can of the methods of using canals. Illustrate the comfort and convenience gained by commerce; the discomfort and distress occasioned by its absence.

Countries. Make a list of the divisions and colonial possessions of the British Empire. Tell of each its resources and products; what it contributes to and receives from the rest of the world. Name and describe the world's other great empires. Tell of each country's contributions to the world's trade. Make a list of the colonial possessions of France; Germany; the Netherlands; Portugal.

Cities. From the tables on pp. 154–155, make a list of the twenty most populous cities of the world. Give the location and some characteristics of each. What route might you follow, and what goods might you carry each way in making trips between Halifax and Liverpool? London and Madras? Odessa and Havre? Hamburg and Vera Cruz? Sydney and San Francisco? Venice and Batum? Duluth and Dublin? Cape Town and Amsterdam? Havana and Glasgow?

AREA AND POPULATION OF THE EARTH.

SUMMARY.

Length of earth's axis (miles)		7,900
Length of equator	"	24,900
Earth's Surface (sq. mi.)		**196,900,000**
Pacific Ocean	(sq. miles)	71,000,000
Atlantic Ocean	" "	34,000,000
Indian Ocean	" "	28,000,000
Antarctic Ocean	" "	7,500,000
Arctic Ocean	" "	4,000,000
The Sea	" "	**144,500,000**

	Sq. Miles.	Population.
North America	9,431,000	106,550,000
South America	6,856,000	38,483,000
Europe	3,842,000	400,990,000
Asia	17,056,000	909,199,000
Africa	11,512,000	141,204,000
Australia, etc.	3,456,000	6,458,000
S. Polar Lands	254,000	.....
The Land	**52,407,000**	**1,602,884,000**

North America.

Greenland	837,837	12,000
Iceland	39,768	79,000
Nova Scotia	21,429	460,000
N. Brunswick	27,992	331,000
Prince Edw. I.	2,162	103,000
Quebec	344,633	1,649,000
Ontario	222,857	2,183,000
Manitoba	73,745	255,000
Brit. Columbia	372,625	179,000
Alberta	253,540	
Saskatchewan	250,650	212,000
Yukon, etc.	2,159,553	
Part Gt. Lakes	30,540	.....
Dom. of Canada	*3,759,726*	*5,372,000*
Newfoundland	42,730	217,000
East Labrador	6,950	4,000
Brit. America	*3,809,406*	*5,593,000*
St. Pierre, etc.	93	7,000
U.S. and Alaska	3,679,403	76,059,000
Mexico	767,258	13,606,000
Guatemala	48,641	1,842,000
Honduras	44,274	544,000
Salvador	8,170	1,007,000
Nicaragua	49,552	429,000
Costa Rica	18,689	335,000
Panama	33,302	(?) 228,000
Pan. Canal Zone	474	(?)
Belize	7,560	37,000
Central America	*205,662*	*4,422,000*
Cuba Group	44,015	2,028,000
Haiti, Rep. of	11,072	1,294,000
Santo Domingo	18,756	416,000
Jamaica	4,841	777,000
Porto Rico	3,435	953,000
Bahama Is.	4,404	54,000
Other Islands	4,937	1,232,000
West Indies	*91,460*	*6,754,000*
Bermuda Is.	19	18,000

South America.

Colombia	465,714	3,917,000
Venezuela	363,822	2,445,000
Guiana, British	95,174	296,000
" Dutch	49,846	87,000
" French	30,465	33,000
Brazil	3,300,816	14,334,000
Paraguay	97,726	636,000
Uruguay	68,996	978,000
Argentina	1,083,551	4,957,000
Chile	293,050	3,174,000
Bolivia	442,636	1,766,000
Peru	438,996	4,586,000
Ecuador	118,627	1,272,000
Falkland Is., etc.	6,573	2,000

Europe.

England	50,839	31,072,000
Wales	7,468	1,456,000
Scotland	30,405	4,472,000
Ireland	32,352	4,459,000
Man and Chan. Is.	303	150,000
Gr. Brit. & Ir.	*121,367*	*41,609,000*
German Empire	210,232	60,605,000
Luxemburg	999	247,000
Netherlands	12,562	5,104,000

Europe (*continued*).

	Sq. Miles.	Population.
Switzerland	15,964	3,325,000
Austria	115,924	26,151,000
Hungary	125,607	19,255,000
Bosnia, etc.	19,702	1,737,000
Liechtenstein	61	10,000
Aus.-Hungary	*261,294*	*47,153,000*
Norway	124,122	2,222,000
Sweden	172,920	5,136,000
Denmark	14,848	2,450,000
Faroe Islands	512	15,000
Belgium	11,369	6,694,000
France	207,217	39,252,000
Monaco	1	15,000
Andorra	175	6,000
Spain	191,986	18,235,000
Gibraltar	2	27,000
Portugal	34,507	5,022,000
Azores	922	257,000
Madeira Is.	315	151,000
Italy Proper	91,455	28,154,000
Sicily	9,937	3,530,000
Sardinia	9,295	792,000
Italy	*110,687*	*32,476,000*
San Marino	24	11,000
Malta	125	188,000
Greece	24,973	2,434,000
Turkey in Eur.	64,599	5,885,000
Bulgaria	37,320	3,744,000
Crete	3,328	310,000
Thasos (Egypt)	152	12,000
Montenegro	3,506	228,000
Servia	18,650	2,494,000
Roumania	50,717	5,957,000
Russia (includ. Pol. & Finland)	1,976,586	105,993,000
Caucasia (north of mountains)	86,660	3,733,000
Sea of Azof	14,519	.....
Nova Zembla	35,449	.....
Russia in Eur.	*2,113,214*	*109,726,000*
Spitzbergen, Franz Josef L'd, Jan Mayen, etc.	33,506	.....

Africa.

Morocco	Including parts of the Sahara	176,062	7,000,000
Algeria		343,629	4,802,000
Tunis		64,623	1,800,000
Tripoli		405,791	1,000,000
Egypt		247,876	9,717,000
Sahara, remaining part		2,461,156	791,000
Anglo-Egyptian Sudan		785,714	4,000,000
Abyssinia		311,880	8,330,000
Eritrea		42,471	331,000
Fr. Somali Coast		8,108	50,000
Brit. Somaliland		59,846	153,000
Brit. East Af.		433,214	4,908,000
It. Somaliland		146,718	400,000
Rio de Oro, etc.		82,124	315,000
Fr. West Africa		680,617	12,700,000
Gambia		3,707	90,000
Port. Guinea		13,089	170,000
Sierra Leone		26,911	1,100,000
Liberia		36,884	1,000,000
Gold Coast		78,533	1,700,000
Togoland		33,668	900,000
Nigeria		361,004	23,700,000
Kamerun		191,120	3,500,000
French Kongo		680,308	8,500,000
Kongo State		926,872	19,000,000
Angola, etc.		490,787	3,840,000
Mozambique		295,779	2,300,000
Zanzibar		960	250,000
Ger. S.W. Africa		317,953	210,000
Ger. E. Africa		374,234	6,855,000
Rhodesia		408,494	1,350,000
Transvaal		114,286	1,345,000
Or. Free State		48,340	387,000
Natal		34,710	1,109,000
C. of Good Hope		276,988	2,410,000
Other Br. S. Af.		313,926	1,394,000
Madagascar		228,610	2,619,000
Is. of Indian O.		3,876	666,000
Canary Islands		2,944	359,000
Cape Verde Is.		1,476	147,000
S. Atlantic Is.		126	6,000

Asia.

	Sq. Miles.	Population.
Arctic Islands	14,896	.....
Siberia	4,899,359	5,712,000
Kirghiz Steppe	706,253	2,461,000
Russian Turk.	641,578	5,261,000
Lake Aral and Caspian Sea	195,551	.....
Transcaucasia	95,801	5,516,000
Khiva, Rus. dep'cy.	23,167	500,000
Bokhara, " "	79,154	1,500,000
Russia in Asia	*6,655,759*	*20,950,000*
Isl. of Cyprus	3,584	237,000
Turkey in Asia	683,155	17,153,000
Sinai Pen. (Egypt)	22,781	25,000
Arabia	879,984	950,000
Oman	74,842	1,000,000
Aden, etc.	15,870	252,000
Persia	635,163	9,000,000
Afghanistan	240,937	4,550,000
India Proper	1,450,734	283,060,000
Burma	264,239	10,491,000
Baluchistan	141,628	811,000
Ceylon, etc.	25,449	3,608,000
Straits Settl's.	35,571	1,452,000
Brit. India, etc.	*1,917,621*	*299,422,000*
Nepal, Bhutan	72,590	3,200,000
Port. India	1,413	572,000
French India	197	273,000
Tonkin	46,025	7,000,000
Anam	52,126	4,620,000
Laos	98,460	605,000
Cochin China	21,970	2,262,000
Cambodia	37,415	1,102,000
Kwangchau	270	60,000
Fr. Indo-China, etc.	*256,463*	*15,922,000*
Siam	244,798	6,320,000
China Proper	1,496,972	407,337,000
Manchuria	362,671	8,500,000
Mongolia	1,076,337	2,580,000
Chinese Turk.	550,001	1,200,000
Tibet	814,319	6,430,000
Chinese Empire	*4,300,900*	*426,047,000*
Hongkong and Weihaiwei	687	523,000
Kiauchau	194	84,000
Macao	4	79,000
Korea	84,251	9,670,000
Japanese Empire	177,359	50,006,000
Luzon Group	49,262	4,066,000
Visayas	21,638	2,863,000
Mindanao Gr.	37,849	580,000
Palawan Group	5,238	36,000
Sulu Islands	1,039	91,000
Philippine Is.	*115,026*	*7,636,000*
Sumatra Group	185,039	3,757,000
Java Group	50,777	25,698,000
Borneo Group	289,948	1,737,000
Celebes Group	71,784	1,998,000
Moluccas, etc.	75,344	2,411,000
As. East Indies	*787,918*	*43,237,000*

Australia, etc.

Victoria	87,884	1,201,000
New S. Wales	310,660	1,359,000
Queensland	668,497	503,000
South Australia	903,689	363,000
Western Australia	975,920	184,000
Tasmania	26,215	173,000
Natives	.....	200,000
Com. of Australia	*2,972,865*	*3,983,000*
New Zealand Gr.	104,663	816,000
New Guinea Gr.	311,032	700,000
Bismarck Arch.	18,186	190,000
Solomon Is.	13,475	200,000
New Hebrides	5,107	50,000
New Caledonia, etc.	7,634	51,000
Fiji Islands	8,046	118,000
Samoa Islands	1,076	39,000
Hawaii	4,015	47,000
Maui and Lanai	863	25,500
Kahoolawe	69	.....
Molokai	261	2,500
Oahu	600	58,500
Kauai and Niihau	641	20,500
Hawaiian Islands	*6,449*	*154,000*
Small Pacific Is.	7,911	157,000

United States, 1900.

	Pop. 1905.	Sq. Mi.	Popular'n.
Alabama	.....	51,998	1,828,697
Arkansas	.....	53,335	1,311,564
California	.....	158,297	1,485,053
Colorado	.....	103,948	539,700
Connecticut	.....	4,965	908,420
Delaware	.....	2,370	184,735
Florida	*614,845*	58,666	528,542
Georgia	.....	59,265	2,216,331
Idaho	.....	84,313	161,772
Illinois	.....	56,665	4,821,550
Indiana	.....	36,354	2,516,462
Iowa	*2,210,337*	56,147	2,231,853
Kansas ('06)	*1,611,460*	82,158	1,470,495
Kentucky	.....	40,598	2,147,174
Louisiana	.....	48,506	1,381,625
Maine	.....	33,040	694,466
Maryland	.....	12,327	1,188,044
Mass.	*3,003,680*	8,266	2,805,346
Mich. ('04)	*2,530,016*	57,980	2,420,982
Minnesota	*1,979,912*	84,682	1,751,394
Mississippi	.....	46,865	1,551,270
Missouri	.....	69,420	3,106,665
Montana	.....	146,572	243,329
Nebraska	.....	77,520	1,066,300
Nevada	.....	110,690	42,335
New Hamp.	.....	9,341	411,588
New Jersey	*2,144,143*	8,224	1,883,669
New York	*8,067,308*	49,204	7,268,894
N. Carolina	.....	52,426	1,893,810
N. Dakota	*437,070*	70,837	319,146
Ohio	.....	41,040	4,157,545
Oklahoma	.....	70,057	790,391
Oregon	.....	96,699	413,536
Pennsylvania	.....	45,126	6,302,115
Rhode Isl'd.	*480,082*	1,248	428,556
S. Carolina	.....	30,989	1,340,316
S. Dakota	*455,185*	77,615	401,570
Tennessee	.....	42,022	2,020,616
Texas	.....	265,896	3,048,710
Utah	.....	84,990	276,749
Vermont	.....	9,564	343,641
Virginia	.....	42,627	1,854,184
Washington	.....	69,127	518,103
W. Virginia	.....	24,170	958,800
Wisconsin	*2,228,949*	56,066	2,069,042
Wyoming	*101,816*	97,914	92,531
Part of the Great Lakes	.....	61,730	....
Total States		*2,851,859*	*75,397,616*

Territories (*Main Body*).

Arizona	.....	113,956	122,931
Dist. of Col.	*323,346*	70	278,718
N. Mexico	.....	122,634	195,310
Total Territories		*236,660*	*596,959*
Total main body		*3,088,519*	*75,994,575*

Outlying Territory, etc.

Alaska Ter.	.....	590,884	63,592
Hawaii Ter.	.....	6,449	154,001
Porto Rico	.....	3,435	953,243
Philippines	('03)	115,026	7,635,426
Tutuila, etc.	.....	77	6,100
Guam	.....	210	9,000
Panama Canal Zone		474	(?)
Persons in the military and naval service of the U.S. stationed abroad	.....	....	91,219
Total outlying		*716,755*	*8,912,581*
Grand Total		*3,805,074*	*84,907,156*

POPULATION OF THE PRINCIPAL CITIES OF THE UNITED STATES.

	Pop. 1905	Pop. 1900
Akron, Ohio		42,728
Alameda, Cal.		16,464
Albany, N.Y.	98,374	94,151
Albuquerque, N.M.		6,238
Alexandria, Va.		14,528
Allentown, Pa.		35,416
Alpena, Mich.	12,400	11,802
Altoona, Pa.		38,973
Amsterdam, N.Y.	23,943	20,929
Anaconda, Mont.		9,453
Anderson, Ind.		20,178
Annapolis, Md.		8,525
Ann Arbor, Mich.	14,599	14,509
Anniston, Ala.		9,695
Ansonia, Conn.		12,681
Appleton, Wis.	17,000	15,085
Asheville, N.C.		14,694
Ashland, Wis.	14,519	13,074
Astoria, Ore.		8,381
Atchison, Kan.	18,159	15,722
Athens, Ga.		10,245
Atlanta, Ga.		89,872
Atlantic City, N.J.	37,593	27,838
Auburn, Me.		12,951
Auburn, N.Y.	31,422	30,345
Augusta, Ga.		39,441
Augusta, Me.		11,683
Aurora, Ill.		24,147
Austin, Tex.		22,258
Baltimore, Md.		508,957
Bangor, Me.		21,850
Barre, Vt.		8,448
Bath, Me.		10,477
Baton Rouge, La.		11,269
Battle Creek, Mich.	22,213	18,563
Bay City, Mich.	27,644	27,628
Bayonne, N.J.	42,202	32,722
Belleville, Ill.		17,484
Berkeley, Cal.		13,214
Beverly, Mass.	15,223	13,884
Biddeford, Me.		16,145
Binghamton, N.Y.	42,036	39,647
Birmingham, Ala.		38,415
Bismarck, N.D.	4,913	3,319
Bloomington, Ill.		23,286
Boise, Ida.		5,957
Boston, Mass.	595,380	560,892
Bridgeport, Conn.		70,996
Brockton, Mass.	47,794	40,063
Brookline, Mass.	23,436	19,935
Brunswick, Ga.		9,081
Buffalo, N.Y.	376,587	352,387
Burlington, Iowa.	25,318	23,201
Burlington, Vt.		18,640
Butte, Mont.		30,470
Cambridge, Mass.	97,434	91,886
Camden, N.J.	83,363	75,935
Canton, Ohio.		30,667
Carson City, Nev.		2,100
Cedar Rapids, Iowa.	28,759	25,656
Charleston, S.C.		55,807
Charleston, W. Va.		11,099
Charlotte, N.C.		18,091
Chattanooga, Tenn.		30,154
Chelsea, Mass.	37,289	34,072
Chester, Pa.		33,988
Cheyenne, Wyo.	13,656	14,087
Chicago, Ill.		1,698,575
Chicopee, Mass.	20,191	19,167
Cincinnati, Ohio.		325,902
Cleveland, Ohio.		381,768
Clinton, Iowa.	22,756	22,698
Cohoes, N.Y.	24,183	23,910
Colorado Springs, Col.		21,085
Columbia, S.C.		21,108
Columbus, Ga.		17,614
Columbus, Ohio.		125,560
Concord, N.H.		19,632
Council Bluffs, Iowa.	25,231	25,802
Covington, Ky.		42,938
Cripple Creek, Col.		10,147
Cumberland, Md.		17,128
Dallas, Tex.		42,638
Danbury, Conn.		16,537
Danville, Va.		16,520
Davenport, Iowa.	39,797	35,254
Dayton, Ohio.		85,333
Decatur, Ill.		20,754
Denver, Col.		133,859
Des Moines, Iowa.	75,626	62,139
Detroit, Mich.	317,591	285,704
Dover, Del.		3,329
Dover, N.H.		13,207
Dubuque, Iowa.	41,941	36,297
Duluth, Minn.	64,942	52,969
Easton, Pa.		25,238
East St. Louis, Ill.		29,655
Eau Claire, Wis.	18,737	17,517
Elgin, Ill.		22,433
Elizabeth, N.J.	60,509	52,130
Elmira, N.Y.	34,687	35,672
El Paso, Tex.		15,906
Erie, Pa.		52,733
Evanston, Ill.		19,259
Evansville, Ind.		59,007
Everett, Mass.	29,111	24,336
Everett, Wash.		7,838
Fall River, Mass.	105,762	104,863
Fargo, N.D.	12,512	9,589
Findlay, Ohio.		17,613
Fitchburg, Mass.	33,021	31,531
Flint, Mich.	14,884	13,103
Fond du Lac, Wis.	17,284	15,110
Fort Scott, Kan.	12,248	10,322
Fort Smith, Ark.		11,587
Fort Wayne, Ind.		45,115
Fort Worth, Tex.		26,688
Frankfort, Ky.		9,487
Frederick, Md.		9,296
Fresno, Cal.		12,470
Galesburg, Ill.		18,607
Galveston, Tex.		37,789
Glens Falls, N.Y.	14,650	12,613
Gloucester, Mass.	26,011	26,121
Gloversville, N.Y.	18,672	18,349
Grand Forks, N.D.	10,127	7,652
Grand Rapids, Mich.	95,718	87,565
Great Falls, Mont.		14,930
Green Bay, Wis.	22,854	18,684
Greensboro, N.C.		10,035
Greenville, Miss.		7,642
Greenville, S.C.		11,860
Guthrie, Okla.		10,006
Hagerstown, Md.		13,591
Hamilton, Ohio.		23,914
Hannibal, Mo.		12,780
Harrisburg, Pa.		50,167
Hartford, Conn.		79,850
Haverhill, Mass.	37,830	37,175
Helena, Mont.		10,770
Henderson, Ky.		10,272
Hoboken, N.J.	65,468	59,364
Holyoke, Mass.	49,934	45,712
Honolulu, Hawaii		39,306
Hot Springs, Ark.		9,973
Houston, Tex.		44,633
Huntington, W. Va.		11,923
Huntsville, Ala.		8,068
Indianapolis, Ind.		169,164
Ishpeming, Mich.	11,623	13,255
Ithaca, N.Y.	14,615	13,136
Jackson, Mich.	25,300	25,180
Jackson, Miss.		7,816
Jackson, Tenn.		14,511
Jacksonville, Fla.	35,301	28,429
Jamestown, N.Y.	26,160	22,892
Janesville, Wis.	13,770	13,185
Jefferson City, Mo.		9,664
Jersey City, N.J.	232,699	206,433
Johnstown, Pa.		35,936
Joliet, Ill.		29,353
Joplin, Mo.		26,023
Kalamazoo, Mich.	29,782	24,404
Kansas City, Kan.	67,614	51,418
Kansas City, Mo.		163,752
Keene, N.H.		9,165
Keokuk, Iowa.	14,604	14,641
Key West, Fla.	20,498	17,114
Kingston, N.Y.	25,556	24,535
Knoxville, Tenn.		32,637
La Crosse, Wis.	29,078	28,895
Lafayette, Ind.		18,116
Lancaster, Pa.		41,459
Lansing, Mich.	20,276	16,485
Laramie, Wyo.	7,601	8,207
Laredo, Tex.		13,429
Las Vegas, N.M.		3,552
Lawrence, Kan.	11,708	10,862
Lawrence, Mass.	70,050	62,559
Leadville, Col.		12,445
Leavenworth, Kan.	20,934	20,735
Lebanon, Pa.		17,628
Lewiston, Me.		23,761
Lexington, Ky.		26,369
Lima, Ohio.		21,723
Lincoln, Neb.		40,169
Little Rock, Ark.		38,307
Lockport, N.Y.	17,552	16,581
Logan, Utah.		5,451
Logansport, Ind.		16,204
Los Angeles, Cal.		102,479
Louisville, Ky.		204,731
Lowell, Mass.	94,889	94,969
Lynchburg, Va.		18,891
Lynn, Mass.	77,042	68,513
Macon, Ga.		23,272
McKeesport, Pa.		34,227
Madison, Wis.	24,301	19,164
Malden, Mass.	38,037	33,664
Manchester, N.H.		56,987
Manistee, Mich.	12,708	14,260
Mankato, Minn.	10,996	10,599
Mansfield, Ohio.		17,640
Marinette, Wis.	15,354	16,195
Marion, Ind.		17,337
Marlboro, Mass.		13,609
Marquette, Mich.	10,665	10,058
Medford, Mass.	19,686	18,244
Melrose, Mass.	14,295	12,962
Menominee, Mich.	11,096	12,818
Memphis, Tenn.		102,320
Meriden, Conn.		24,296
Meridian, Miss.		14,050
Middletown, N.Y.	14,516	14,522
Milwaukee, Wis.	312,948	285,315
Minneapolis, Minn.	261,974	202,718
Mobile, Ala.		38,469
Montgomery, Ala.		30,346
Montpelier, Vt.		6,266
Mount Vernon, N.Y.	25,006	21,228
Muncie, Ind.		20,942
Muskegon, Mich.	20,897	20,818
Nashua, N.H.		23,898
Nashville, Tenn.		80,865
Natchez, Miss.		12,210
New Albany, Ind.		20,628
Newark, N.J.	283,289	246,070
Newark, Ohio.		18,157
New Bedford, Mass.	74,362	62,442
Newbern, N.C.		9,090
New Britain, Conn.		25,998
New Brunswick, N.J.	23,133	20,006
Newburgh, N.Y.	26,498	24,943
Newburyport, Mass.	14,675	14,478
Newcastle, Pa.		28,339
New Haven, Conn.		108,027
New London, Conn.		17,548
New Orleans, La.		287,104
Newport, Ky.		28,301
Newport, R.I.	25,039	22,034
Newport News, Va.		19,635
New Rochelle, N.Y.	20,480	14,720
Newton, Mass.	36,827	33,587
New York, N.Y.	4,013,781	3,437,202
Manhattan Boro.	2,112,380	1,850,093
Brooklyn "	1,358,686	1,166,582
Bronx "	271,630	200,507
Queens "	198,240	152,999
Richmond "	72,845	67,021
Niagara Falls, N.Y.	26,560	19,457
Nome, Alaska		12,488
Norfolk, Va.		46,624
Norristown, Pa.		22,265
North Adams, Mass.	22,150	24,200
Northampton, Mass.	19,957	18,643
Norwich, Conn.		17,251
Oakland, Cal.		66,960
Ogdensburg, N.Y.	13,179	12,633
Ogden, Utah.		16,313
Oklahoma, Okla.		10,037
Olympia, Wash.		3,863
Omaha, Neb.		102,555
Orange, N.J.	26,101	24,141
Oshkosh, Wis.	30,575	28,284
Oswego, N.Y.	22,572	22,199
Ottumwa, Iowa.	20,181	18,197
Owensboro, Ky.		13,189
Paducah, Ky.		19,446
Parkersburg, W.Va.		11,703
Passaic, N.J.	37,837	27,777
Paterson, N.J.	111,529	105,171
Pawtucket, R.I.	43,381	39,231
Pensacola, Fla.		17,747
Peoria, Ill.		56,100
Perth Amboy, N.J.	25,895	17,699
Petersburg, Va.		21,810
Philadelphia, Pa.		1,293,697
Phoenix, Ariz.		5,544
Pierre, S.D.	2,794	2,306
Pine Bluff, Ark.		11,496
Pittsburg, Pa.		451,512
Pittsfield, Mass.	25,001	21,766
Plainfield, N.J.	18,468	15,369
Port Huron, Mich.	20,028	19,158
Portland, Me.		50,145
Portland, Ore.		90,426
Portsmouth, N.H.		10,637
Portsmouth, Ohio.		17,870
Portsmouth, Va.		17,427
Pottsville, Pa.		15,710
Poughkeepsie, N.Y.	25,379	24,029
Providence, R.I.	198,635	175,597
Provo, Utah.		6,185
Pueblo, Col.		28,157
Quincy, Ill.		36,252
Quincy, Mass.	23,076	23,899
Racine, Wis.	32,290	29,102
Raleigh, N.C.		13,643
Reading, Pa.		78,961
Reno, Nev.		4,500
Richmond, Ind.		18,226
Richmond, Va.		85,050
Roanoke, Va.		21,495
Rochester, N.Y.	181,666	162,608
Rockford, Ill.		31,051
Rock Island, Ill.		19,493
Rome, N.Y.	16,562	15,343
Rutland, Vt.		11,499
Sacramento, Cal.		29,282
Saginaw, Mich.	46,610	42,345
St. Albans, Vt.		6,239
St. Augustine, Fla.		4,272
St. Joseph, Mo.		102,979
St. Louis, Mo.		575,238
St. Paul, Minn.	197,023	163,065
Salem, Mass.	37,627	35,956
Salem, Ore.		4,258
Salt Lake City, Utah.		53,531
San Antonio, Tex.		53,321
San Diego, Cal.		17,700
Sandusky, Ohio.		19,664
San Francisco, Cal.		342,782
San Jose, Cal.		21,500
Santa Fe, N.M.		5,603
Saratoga Springs, N.Y.	12,999	12,409
Sault Ste. Marie, Mich.	11,442	10,538
Savannah, Ga.		54,244
Schenectady, N.Y.	58,387	31,682
Scranton, Pa.		102,026
Seattle, Wash.		80,671
Sedalia, Mo.		15,231
Selma, Ala.		8,713
Shamokin, Pa.		18,202
Sheboygan, Wis.	24,026	22,962
Shenandoah, Pa.		20,321
Shreveport, La.		16,013
Sioux City, Iowa.	40,952	33,111
Sioux Falls, S.D.	12,283	10,266
Sitka, Alaska		1,396
Somerville, Mass.	69,272	61,643
South Bend, Ind.		35,999
South Omaha, Neb.		26,001
Spartanburg, S.C.		11,395
Spokane, Wash.		36,848
Springfield, Ill.		34,159
Springfield, Mass.	73,540	62,059
Springfield, Mo.		23,267
Springfield, Ohio.		38,253
Stamford, Conn.		15,997
Stillwater, Minn.	12,435	12,318
Stockton, Cal.		17,506
Superior, Wis.	36,551	31,091
Syracuse, N.Y.	117,503	108,374
Tacoma, Wash.		37,714
Tallahassee, Fla.	3,311	2,981
Tampa, Fla.	22,323	15,839
Taunton, Mass.	30,967	31,036
Terre Haute, Ind.		36,673
Toledo, Ohio.		131,822
Topeka, Kan.	37,641	33,608
Trenton, N.J.	84,180	73,307
Troy, N.Y.	76,910	60,651
Tucson, Ariz.		7,531
Utica, N.Y.	62,934	56,383
Vicksburg, Miss.		14,834
Virginia City, Nev.		2,695
Waco, Tex.		20,686
Walla Walla, Wash.		10,049
Waltham, Mass.	26,282	23,481
Washington, D.C.		278,718
Waterbury, Conn.		45,859
Watertown, N.Y.	25,447	21,696
Watervliet, N.Y.	14,600	14,321
Wheeling, W.Va.		38,878
Wichita, Kan.	31,110	24,671
Wilkes-Barre, Pa.		51,721
Williamsport, Pa.		28,757
Wilmington, Del.		76,508
Wilmington, N.C.		20,976
Winona, Minn.	20,334	19,714
Winston, N.C.		10,008
Woburn, Mass.	14,402	14,254
Woonsocket, R.I.	32,196	28,204
Worcester, Mass.	128,135	118,421
Yonkers, N.Y.	61,716	47,931
York, Pa.		33,708
Youngstown, Ohio.		44,885
Zanesville, Ohio.		23,538

POPULATION OF THE PRINCIPAL FOREIGN CITIES.

Aberdeen, Scotland	144,000	('01)	Cuzco, Peru	20,000		London, Canada	38,000	('01)	Rotterdam, Netherlands	390,000	('06)
Adelaide, Australia	163,000	('01)	Damascus, Turkey	250,000		London, England	4,537,000	('01)	Roubaix, France	121,000	('06)
Alexandria, Egypt	320,000	('97)	Delhi, India	209,000	('01)	Lucknow, India	264,000	('01)	Rouen, France	119,000	('06)
Algiers, Algeria	138,000	('06)	Dortmund, Germany	176,000	('05)	Lyons, France	472,000	('06)	Saigon, French Indo-China	51,000	('06)
Altona, Germany	168,000	('05)	Dresden, Germany	517,000	('05)	Madras, India	509,000	('01)	St. Etienne, France	147,000	('06)
Amsterdam, Netherlands	564,000	('06)	Dublin, Ireland	291,000	('01)	Madrid, Spain	540,000	('00)	St. John, Canada	41,000	('01)
Antofagasta, Chile	26,000	('05)	Duisburg, Germany	192,000	('05)	Magdeburg, Germany	241,000	('05)	St. Johns, Newfoundland	30,000	('01)
Antwerp, Belgium	304,000	('06)	Dundee, Scotland	161,000	('01)	Malaga, Spain	130,000	('00)	St. Louis, Senegal	24,000	('04)
Arequipa, Peru	35,000		Dunedin, New Zealand	36,000	('06)	Managua, Nicaragua	35,000	('06)	St. Petersburg, Russia	1,267,000	('97)
Asuncion, Paraguay	60,000	('05)	Dusseldorf, Germany	253,000	('05)	Manchester, England	544,000	('01)	Salford, England	221,000	('01)
Athens, Greece	170,000	('06)	Edinburgh, Scotland	317,000	('01)	Mandalay, Burma	184,000	('01)	Saloniki, Turkey	150,000	
Auckland, New Zealand	38,000	('06)	Essen, Germany	231,000	('05)	Manila, Philippine Islands	220,000	('03)	San Jose, Costa Rica	26,000	('04)
Bagdad, Turkey	145,000		Fez, Morocco	140,000		Maracaibo, Venezuela	34,000	('94)	San Juan, Porto Rico	32,000	('99)
Bahia, Brazil	230,000	('00)	Florence, Italy	206,000	('01)	Maranhão, Brazil	32,000	('00)	San Luis Potosi, Mexico	61,000	('00)
Baku, Transcaucasia	112,000	('97)	Frankfurt am Main, Germany	335,000	('05)	Marseilles, France	518,000	('06)	San Salvador, Salvador	60,000	('01)
Ballarat, Australia	50,000	('01)	Fredericton, Canada	7,000	('01)	Maskat, Oman	25,000		Santiago, Chile	405,000	('07)
Bangkok, Siam	400,000		Fuchau, China	624,000	('04)	Matanzas, Cuba	36,000	('07)	Santiago de Cuba	45,000	('07)
Barcelona, Spain	533,000	('00)	Geneva, Switzerland	104,000	('00)	Mecca, Turkey	60,000		Santos, Brazil	35,000	('00)
Barfrush, Persia	50,000		Genoa, Italy	235,000	('01)	Medellin, Colombia	60,000	('05)	São Paulo, Brazil	332,000	('02)
Barranquilla, Colombia	40,000	('05)	Georgetown, British Guiana	53,000	('91)	Melbourne, Australia	496,000	('01)	Seoul, Korea	197,000	('02)
Basel, Switzerland	113,000	('00)	Ghent, Belgium	163,000	('06)	Messina, Italy	150,000	('01)	Seville, Spain	148,000	('00)
Batavia, Java	116,000	('01)	Glasgow, Scotland	736,000	('01)	Mexico, Mexico	345,000	('00)	Shanghai, China	651,000	('04)
Beirut, Turkey	120,000		Gothenburg, Sweden	131,000	('00)	Milan, Italy	493,000	('01)	Sheffield, England	381,000	('01)
Belfast, Ireland	349,000	('01)	Gratz, Austria	138,000	('00)	Mollendo, Peru	3,000		Singapore, Straits Settlements	229,000	('01)
Belgrade, Servia	78,000	('05)	Guadalajara, Mexico	101,000	('00)	Monterey, Mexico	62,000	('00)	Smyrna, Turkey	201,000	
Benares, India	209,000	('01)	Guayaquil, Ecuador	80,000		Montevideo, Uruguay	309,000	('07)	Sofia, Bulgaria	88,000	('05)
Bergen, Norway	72,000	('00)	Hague, Netherlands	249,000	('06)	Montreal, Canada	268,000	('01)	Stettin, Germany	224,000	('05)
Berlin, Germany	2,040,000	('05)	Haiderabad, India	449,000	('01)	Morocco, Morocco	45,000		Stockholm, Sweden	301,000	('00)
Bern, Switzerland	64,000	('00)	Halifax, Canada	41,000	('01)	Moscow, Russia	989,000	('97)	Strassburg, Germany	168,000	('05)
Bilbao, Spain	83,000	('00)	Hamburg, Germany	803,000	('05)	Mukden, Manchuria	200,000		Stuttgart, Germany	249,000	('05)
Birmingham, England	522,000	('01)	Hamilton, Canada	53,000	('01)	Munich, Germany	539,000	('05)	Suchau, China	500,000	('04)
Bloemfontein, Orange Free State	34,000	('04)	Hangchau, China	300,000	('04)	Nagoya, Japan	289,000	('03)	Sucre, Bolivia	21,000	('00)
Bogota, Colombia	100,000	('05)	Hankau, China	870,000	('04)	Nantes, France	133,000	('06)	Sydney, Australia	482,000	('01)
Bologna, Italy	152,000	('01)	Hanover, Germany	250,000	('05)	Naples, Italy	564,000	('01)	Tabriz, Persia	200,000	
Bombay, India	776,000	('01)	Havana, Cuba	297,000	('07)	Newcastle, England	215,000	('01)	Talca, Chile	43,000	('05)
Bordeaux, France	252,000	('06)	Havre, France	133,000	('06)	New Guatemala, Guatemala	97,000	('04)	Tananarivo, Madagascar	65,000	('06)
Bradford, England	280,000	('01)	Hobart, Tasmania	25,000	('01)	Nice, France	134,000	('06)	Tashkend, Turkestan	157,000	('97)
Bremen, Germany	215,000	('05)	Hull, England	241,000	('01)	Ningpo, China	260,000	('04)	Tegucigalpa, Honduras	35,000	
Breslau, Germany	471,000	('05)	Iquique, Chile	44,000	('05)	Nottingham, England	240,000	('01)	Teheran, Persia	280,000	
Brisbane, Australia	120,000	('01)	Irkutsk, Siberia	52,000	('97)	Nuremberg, Germany	294,000	('05)	Tientsin, China	750,000	('04)
Bristol, England	329,000	('01)	Ispahan, Persia	80,000		Odessa, Russia	405,000	('97)	Tiflis, Transcaucasia	161,000	('97)
Brussels, Belgium	623,000	('06)	Jerusalem, Turkey	70,000		Oporto, Portugal	168,000	('00)	Tiumen, Siberia	30,000	('97)
Bucharest, Roumania	282,000	('99)	Johannesburg, The Transvaal	159,000	('04)	Oran, Algeria	100,000	('06)	Tokyo, Japan	1,819,000	('03)
Budapest, Hungary	732,000	('00)	Kabul, Afghanistan	100,000		Osaka, Japan	996,000	('08)	Toronto, Canada	208,000	('01)
Buenos Aires, Argentina	1,102,000	('07)	Kandahar, Afghanistan	50,000		Ottawa, Canada	60,000	('01)	Toulouse, France	150,000	('06)
Bushire, Persia	20,000		Kharkof, Russia	175,000	('97)	Palermo, Italy	310,000	('01)	Trebizond, Turkey	35,000	
Cairo, Egypt	570,000	('97)	Kief, Russia	247,000	('97)	Panama, Panama	30,000		Trieste, Austria	134,000	('00)
Calcutta, India	1,127,000	('01)	Kimberley, Cape of Good Hope	34,000	('04)	Para, Brazil	100,000	('00)	Tripoli, Tripoli	30,000	
Callao, Peru	34,000		Königsberg, Germany	224,000	('05)	Paramaribo, Dutch Guiana	34,000	('05)	Tucuman, Argentina	55,000	('05)
Canton, China	900,000	('04)	Kyoto, Japan	381,000	('03)	Paris, France	2,763,000	('06)	Tunis, Tunis	250,000	
Cape Town, Cape of Good Hope	78,000	('04)	La Guaira, Venezuela	14,000		Peking, China	1,000,000 ?		Turin, Italy	336,000	('01)
Caracas, Venezuela	73,000	('94)	Lahore, India	203,000	('01)	Pernambuco, Brazil	120,000	('00)	Valencia, Spain	214,000	('00)
Cardiff, Wales	164,000	('01)	La Paz, Bolivia	55,000	('00)	Perth, Australia	36,000	('01)	Valencia, Venezuela	89,000	('94)
Catania, Italy	150,000	('01)	La Plata, Argentina	85,000	('05)	Port Elizabeth, Cape of Good Hope	33,000	('04)	Valparaiso, Chile	188,000	('07)
Cayenne, French Guiana	13,000	('01)	Lassa, Tibet	25,000		Porto Alegre, Brazil	80,000	('00)	Vancouver, Canada	26,000	('01)
Cetinje, Montenegro	4,000		Leeds, England	429,000	('01)	Port Said, Egypt	42,000	('97)	Venice, Italy	152,000	('01)
Charlottetown, Canada	12,000	('01)	Leghorn, Italy	98,000	('01)	Portsmouth, England	189,000	('01)	Vera Cruz, Mexico	29,000	('00)
Chemnitz, Germany	245,000	('05)	Leicester, England	212,000	('01)	Prague, Austria	202,000	('00)	Victoria, Canada	21,000	('01)
Chillan, Chile	43,000	('05)	Leipzig, Germany	504,000	('05)	Pretoria, The Transvaal	37,000	('04)	Vienna, Austria	1,675,000	('00)
Christiania, Norway	228,000	('00)	Lemberg, Austria	160,000	('00)	Puebla, Mexico	94,000	('00)	Vilna, Russia	160,000	('97)
Cochabamba, Bolivia	22,000	('00)	Leon, Mexico	63,000	('00)	Quebec, Canada	69,000	('01)	Vladivostok, Siberia	29,000	('97)
Cologne, Germany	429,000	('05)	Liege, Belgium	172,000	('06)	Quito, Ecuador	51,000	('06)	Warsaw, Russia	638,000	('97)
Colombo, Ceylon	158,000	('01)	Lille, France	206,000	('06)	Rangoon, Burma	235,000	('01)	Wellington, New Zealand	59,000	('06)
Concepcion, Chile	61,000	('05)	Lima, Peru	130,000	('03)	Riga, Russia	256,000	('97)	Winnipeg, Canada	42,000	('01)
Constantinople, Turkey	1,125,000		Lisbon, Portugal	356,000	('00)	Rio de Janeiro, Brazil	811,000	('06)	Yokohama, Japan	326,000	('03)
Copenhagen, Denmark	427,000	('06)	Liverpool, England	685,000	('01)	Rome, Italy	463,000	('01)	Zanzibar, Africa	70,000	
Cordova, Argentina	53,000	('05)	Lodz, Russia	315,000	('97)	Rosario, Argentina	151,000	('06)	Zurich, Switzerland	150,000	('00)

HEIGHTS OF MOUNTAINS AND PLATEAUS.

	FEET.		FEET.		FEET.
Abyssinian Highland	6,500	Demavend, volcano, Persia	18,846	Mexican Plateau, Mexico	7,500
Aconcagua, Argentina	23,082	Elburz, Mount, Caucasus	18,493	Mitchell, Mount, North Carolina	6,711
Alps, Switzerland	8,500	Etna, volcano, Sicily	10,874	Mongolian Plateau, Asia	3,500
Altai Mountains, Mongolia	6,300	Everest, Mount, Nepal	29,002	Orizaba, volcano, Mexico	18,314
Andes, South America	13,000	Fremont Peak, Wyoming	13,790	Pikes Peak, Colorado	14,111
Apennines, Italy	4,000	Fujiyama, volcano, Japan	14,177	Popocatepetl, volcano, Mexico	17,784
Appalachian Mountains, U. S	2,500	Guiana Plateau	2,000	Pyrenees Mountains, Spain	8,000
Atlas Mountains, Africa	9,000	Hecla, volcano, Iceland	5,110	Rainier, Mount, Washington	14,363
Australian Mountains, E. Australia	5,000	Himalaya Mountains, Asia	19,000	Rocky Mountain Highland, U. S	5,000
Balkan Mountains, Europe	4,500	Hindu-Kush, Afghanistan	18,000	Rocky Mountains, North America	10,000
Blanc, Mont, France	15,744	Hooker, Mount, Canada	12,000	Sahama, volcano, Bolivia	22,350
Bohmerwald, Austria-Hungary	2,500	Iran Plateau, Persia	5,000	Shasta, Mount, California	14,380
Bolivian Plateau	12,500	Jura Mountains, France	3,000	Sierra Nevada, United States	9,000
Brazilian Plateau	2,000	Karakoram Mountains, Tibet	18,500	Sorata, Bolivia	21,286
Carpathian Mountains, Aus.-Hun	5,000	Kenia, Mount, Africa	18,000	St. Elias, Mount, Alaska	18,010
Cascade Mountains, North America	9,000	Kilimanjaro, Africa	20,000	Thian Shan, Asia	18,000
Caucasus Mountains, Russia	10,000	Kioleu Mountains, Norway	3,000	Tibet Plateau	15,000
Chimborazo, volcano, Ecuador	20,517	Kuenlun, Tibet	18,000	Ural Mountains, Russia	3,500
Coast Ranges, United States	3,000	Longs Peak, Colorado	14,271	Vesuvius, volcano, Italy	4,205
Cotopaxi, volcano, Ecuador	16,291	Mauna Kea, Hawaii	13,953	Washington, Mount, N. H	6,279
Dekkan Plateau, India	2,000	McKinley, Mount, Alaska	20,464	Whitney, Mount, California	14,502

WEALTH AND EARNINGS.

(*Mulhall*)

	Wealth in million dollars.	Annual Earnings in million dollars.	Av'ge An. Earn. per money earner.	Av'ge Inhab. per sq. mile.
United States (main body)	78,480	14,957	$473	25
Great Britain and Ireland	56,668	6,830	406	344
France	46,512	5,755	333	188
Germany	38,650	6,163	258	288
European Russia	30,840	4,819	100	52
Austria-Hungary	21,658	3,394	164	180
Italy	15,168	2,093	160	293
Spain	11,424	1,310	179	95
Belgium	4,742	869	296	609
Netherlands	4,224	595	275	408
Sweden and Norway	3,792	682	219	25
Denmark	2,429	288	290	164
Switzerland	2,362	336	278	208
Portugal	1,973	307	175	148
Greece	1,066	184	125	97
Balkan States	4,925	766	137	113
Total Europe exc. Turkey	*246,534*	*34,281*	*207*	*105*
Australia and New Zealand	5,165	1,032	580	1
Canada	4,814	878	368	1
Argentina	2,957	456	254	4

RIVERS AND THEIR BASINS.

River System.	An. Rainfall in Basin. Cubic Miles.	Area of Basin. Square Miles.	Longest Stream. Miles.	River System.	An. Rainfall in Basin. Cubic Miles.	Area of Basin. Square Miles.	Longest Stream. Miles.
Amazon (exc. Tocantins)	2,333.3	2,320,000	3,400	Danube	198.7	320,000	1,800
Congo	1,218.0	1,500,000	2,800	Irawadi	180.8	180,000	(?)
Plata	1,035.4	1,150,000	2,500	Volga	152.3	590,000	2,300
Nile	892.1	1,300,000	3,900	Yukon	150.0	380,000	2,000
Mississippi-Missouri	673.0	1,250,000	4,200	Murray	140.0	350,000	1,100
Orinoco	603.3	425,000	1,500	Nelson-Saskatchewan	130.0	470,000	1,900
Niger	570.0	1,000,000	2,900	Hoang	117.7	390,000	2,800
Ganges-Brahmaputra	548.7	600,000	1,800	Magdalena	116.7	90,000	1,100
Yangtze	408.8	690,000	3,100	Mackenzie	115.0	680,000	2,100
St. Lawrence	338.9	565,000	2,100	Rio Grande	113.6	230,000	1,800
Yenisei	330.0	1,500,000	3,000	Indus	104.4	360,000	1,900
Zambezi	300.0	580,000	1,600	Columbia	90.0	290,000	1,400
Ob	280.0	1,100,000	3,000	Euphrates	60.0	490,000	2,000
Lena	270.0	900,000	2,800	Dnieper	56.0	197,000	1,300
Amur	240.0	780,000	2,700	Colorado	55.0	230,000	1,000
São Francisco	218.4	210,000	1,800	Orange	50.9	270,000	1,200
Mekong	200.0	280,000	2,600	Po	28.9	27,000	460

LAKES.

	Area. Sq. Miles.	Altitude. Feet.	Depth. Feet.
Caspian	169,384±	−85±	3,096±
Victoria	32,107	4,000 ?	620
Superior	31,200	602	1,008
Aral	26,167±	150±	220±
Huron	23,800	581	702
Michigan	22,450	581	870
Tanganyika	14,000	2,670	1,300±
Baikal	13,197	1,400 ?	4,500
Tchad	10,400±	1,100±	20±
Erie	9,960	573	210
Winnipeg	9,400	710	72
Balkash	8,550±	900±	185±
Ontario	7,240	247	738
Ladoga	7,000	55	732
Titicaca	3,261	12,500	925
Nicaragua	2,800	108	320
Great Salt Lake	2,300±	4,200±	50±
Dead Sea	350	−1,290±	1,305±

INDEX AND PRONOUNCING VOCABULARY

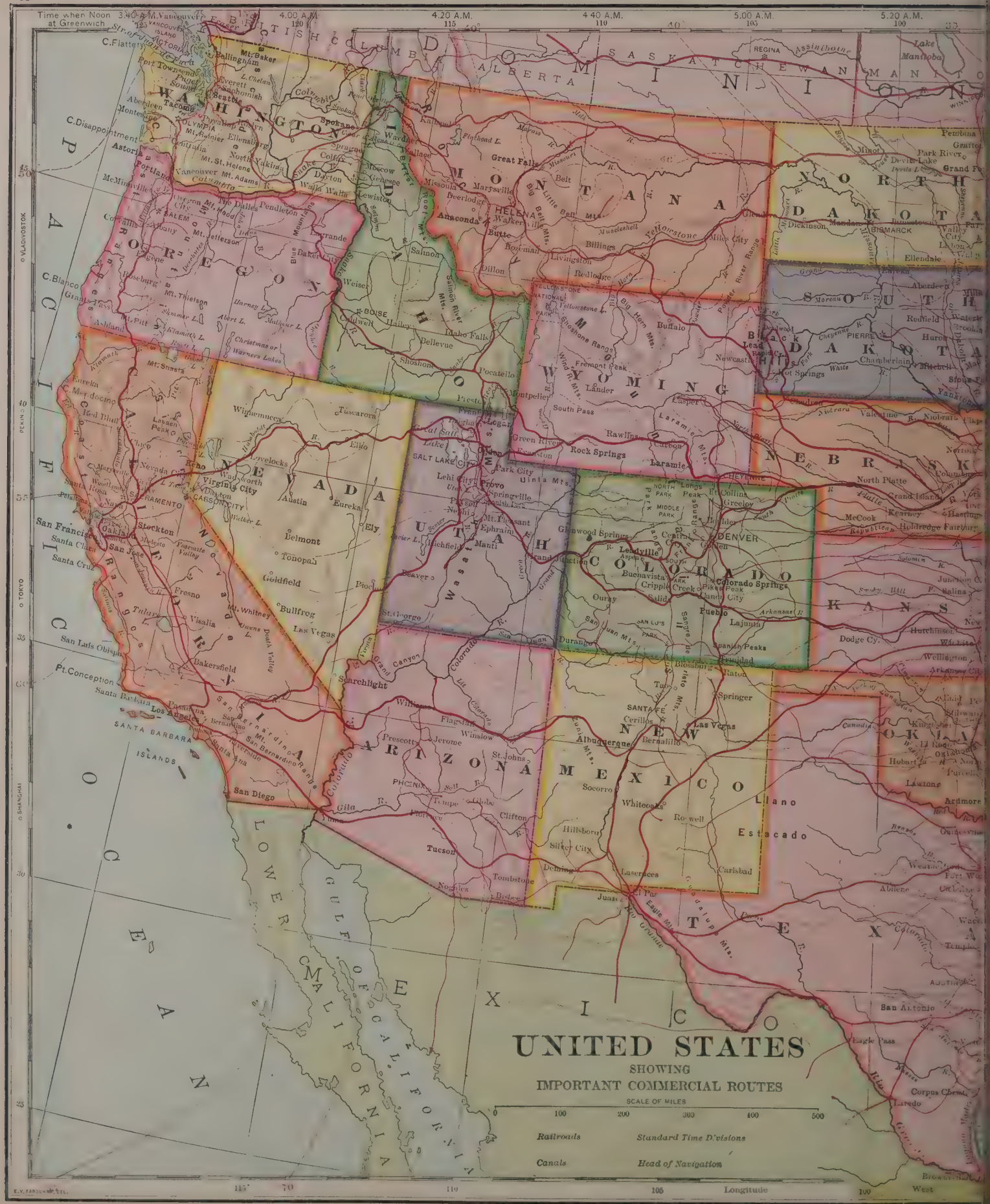
KEY. — VOWELS: **ā** in **lāte**, **ă** in **făt**, **â** in **câre**, **ä** in **färe**, **å** in **låst**, **ą** in **fąll**, **ą** in **wąs**, **a** in **finąl**, **au** in **author**; **ē** in **mē**, **ĕ** in **mĕt**, **bĕrry**, **ę** in **vęil**, **ē** in **tērm**, **ę** in **novęl**; **ī** in **fīne**, **ĭ** in **tĭn**, **ĭ** in **poĭice**; **ō** in **nōte**, **ŏ** in **nŏt**, **ó** in **són**, **ô** in **fôr**, **ọ** in **dọ**, **ọ** in **wọlf**; **ū** in **tūne**, **ŭ** in **nŭt**, **ụ** in **rụde** (= **ọ**), **ụ** in **fụll**, **ü** = French **u**, **ua** = **wa**, **ue** = **we**; **ȳ** in **mȳ**, **ў** in **hўmn**. CONSONANTS: **ç** in **çent**, **maçhine**, **c** in **can**; **ġ** in **ġem**, **g** in **ġet**; **K** = German **ch**; **ṉ** = **ng**, **ñ** like **ny** in **barnyard**, **N** = **ng** in its effect (nasal) on the preceding vowel, but is itself silent; **ş** = **z**; **th** in **thine**; **x** = **gz**. *Italic letters are silent.*

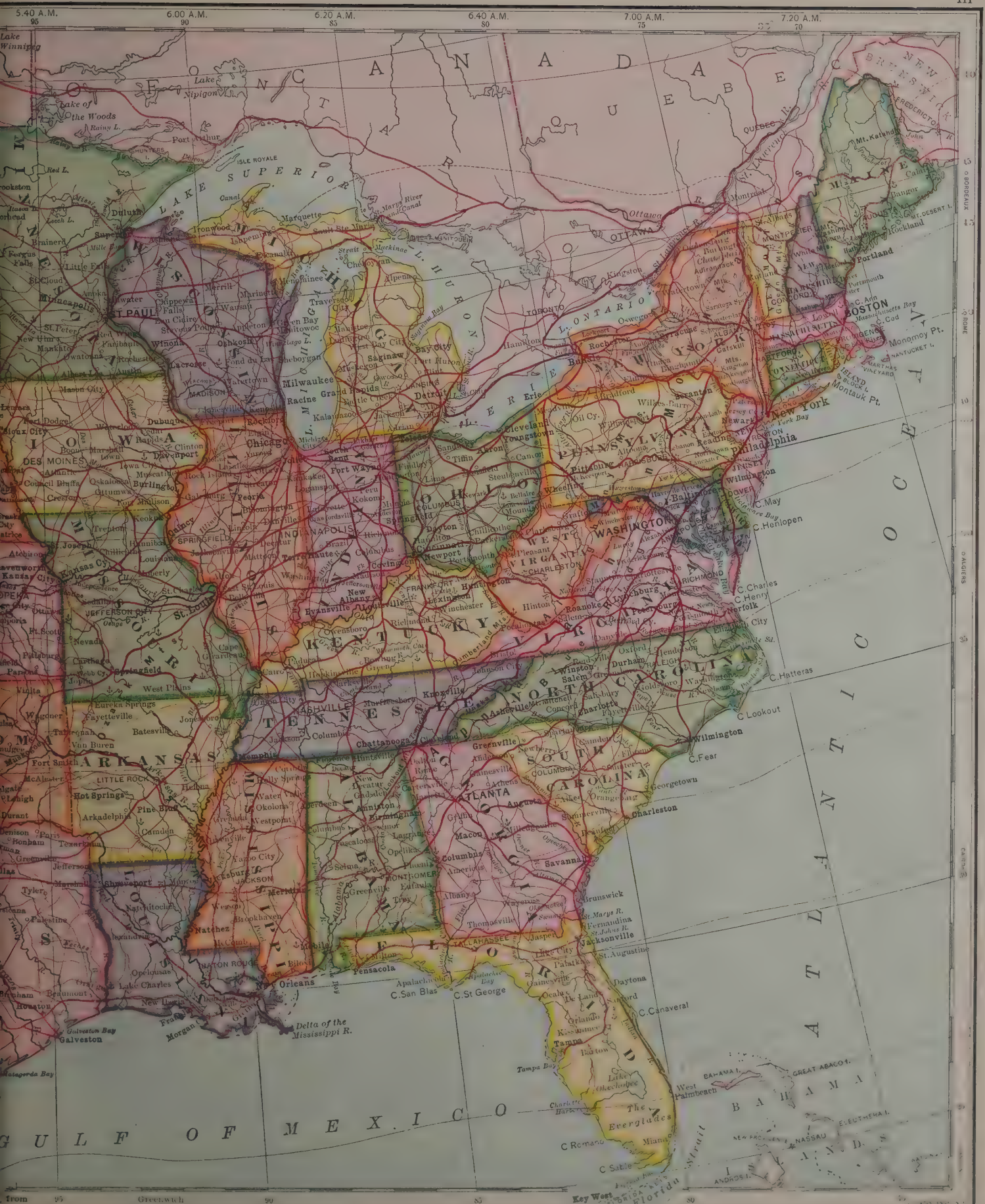
Ăb-ўs-sīn′ĭ-å 144
Ą-cå-pụl′co 93
Å-cŏn-cä′guå, Mt. 104
Ąd′ē-lāĭde 148
Å′den 133
Ad-ī-rŏn′dack Mts. 43
Ad-rĭ-ăt′ic Sea 115
Æ-ġē′ąn (ē-) Sea 115
Åf-ġhăn-ĭs-tän′ 134
Af′rĭ-cå 9, 140–145
African life region 26, 142
ag′rĭ-cul-ture 31, 51, 59, 72, 79, 83, 102, 116, 135, 137, 138, 143, 148
Å-gụl′has (-yås), C. 141
Ak′rŏn 67
Al-å-bä′må 75
Å-lå-mę′då 85
Å-lăs′kå 85, 41
Al′bå-ny (ąl′-) 63
Al′be-marle Sd. 73
Al-bēr′tå 89
Al-bụ-quer′que (-kûr′kā) 81
Al-ĕx-ăn′drĭ-å 143
Al-ġē′rĭ-å 143
Al-ġiērş′ 143
Al′le-ġhę-ny 64
Allegheny plateaus 44
al-lū′vĭ-um 15
Ål-må-den′ (-thān′) 125
Alps 110
Ål-säçe′-Lōr-rāĭne′ 120
Ål-tąĭ′ Mts. 110
Al-tå-mâ-hą′ (ąl-) R. 74
Am′a-zŏn R. 98, 103
a-meer′ 134
Å-mĕr′ĭ-cå, or Western Continent 9, 10
American race 28, 29
Am′ster-dăm 121
Å-mụr′ R. 110
An-a-con′då 80
Ā-nåm′ 136, 132
An′dēş Mts. 97
An-dŏr′rå 125
An-dros-cog′ġin R. 55
Ąn′glo-Ē-ġўp′tian (-shąn) Sụ-dän′ 143
An-gō′lå 144
an′i-mals 24–27, 32, 39, 89, 101, 111, 112, 142, 147
An-năp′o-lis 65
Ann Ar′bor 69
An′nis-ton 75
Ant-ärc′tic 9, 19
An-tĭ-cŏs′tĭ 87
Ąn-tĭl′lēş 93
Ån-tō-få-gäs′tå 105, 106
Ant′werp 124
Ap-å-lăch′ee B. 75
Ap-å-lăch-ĭ-cō′lå R. 75
Ap′ęn-nīneş 125
Åp-pa-lā′chĭ-an 37, 43, 44
Å-rā′bĭ-å 133
Ăr′ăbş 28, 133, 134, 139, 142, 143
Å′rå-fụ-rå Sea 149
Ăr′ąl, L. 111
ar-eå′ĭ-pĕl′a-go 9
Arc′tic 9, 19, 23, 87
Ard′more 77
Å-rę-quĭ′på (-kē′-) 106
Ar-ġĕn-tī′nå 104, 102
Ăr-ĭ-zō′nå 81, 31
Ar′kąn-sąs 76
Ar-mē′nĭ-anş 128, 133, 134
ar-tē′sian (-zhąn) well 13
Är′yanş 28
Ashe′ville 74
Asia (ā′shĭ-å) 9, 130–139
Às-sĭn′ĭ-boine R. 88
Às-suän′ 143
As-tō′rĭ-a 84
Å-sụn-cĭ-ōn′ 105
Åt-bä′rå R. 141
Atch-å-få-laƴ′å 76
Ath-a-băs′cå L. 37
Ath′ēns, Ga. 75; Gr. 126
At-lăn′tå 74
At-lăn′tic 9, 23
Atlantic plain 43
At′ląs Mts. 141
at′mos-phere 20
å-tŏll′ 18
Au′burn 56
Auck′lạnd 149
Au-gus′tå, Ga. 75; Me. 56
Aus′tin 77
Aus-trā′lĭ-a 9, 147, 18, 29
Australian life region 25, 147
Aus′trĭ-å-Huṉ′gå-ry 122, 115, 116
au′tumn 19
Auvergne (ō-vârñ′) 124
ax′is 6, 19
Ā′zōf, Sea 115
Å-zōreş′ 125
Az′tecs 92
Bäb ĕl Măn′dĕb, Str. 141
Bad Lands 45
Bąg-dād′ 133
Bå-hā′mąs 41, 93, 94
Bå-ĥĭ′å 104
Bąĭ-käl′, L. 111
Bå-kų′ 129, 132
Băl-e-ăr′ic Is. 125
Bål-kän′ Mts. 128
Bål-käsh′, L. 111
Băl-la-răt′ 148
Bąl′tic Sea 115
Bąl′tĭ-mōre 65
Bå-lų-chĭs-tän′ 134
Bän′då Sea 149
Băng-kŏk′ 136
Ban′gôr 56
Bang-wē-ō′lō, L. 141
Bän′kå 139
bar 16
Bå-rā′nŏf 85
Bar-bā′dōş 95
bar-bā′rĭ-ans 29
Bar′ba-ry States 143
Bar-ce-lō′nå 125
Bar-frųsh′ 134
Bar-rån-quil′la (-kēl′yå) 107
băr′ri-er beach 17
Bä′sęl 124
bā′sin 14
Bå-tā′vĭ-å 139
Bät′ón Rouge (rọzh) 77
Bå-tụm′ 133
bay 11
Bay City 69
Bā-yōnne 65
bąȳ′ọu 15
beach 17
Bĕd′oụ-inş 133
beets 31, 69, 71, 81, 84, 116, 120, 124, 129
Bęĭ′rụt 133
Bel-fąst′ 120
Bel′ġĭ-ŭm, Bel′ġĭ-anş 124, 115, 116, 144
Bel-grāde′ 128
Bę-līze′ 93
Ben-ä′rĕş 135
Ben-gąl′, Bay 109
Ben-în′, Bight 141
Bēr′bērş 142, 143
Ber′ġęn (bär′-) 122
Bē′ring Str. 9
Bērke′ley 85
Bērk′shīre Hills 55
Bēr′lin 120
Bēr-mū′då 36
Bērn 124
bęy 143
Bhụ-tän′ 135
Bī-ä′frå, Bight 141
Bid′de-ford (-fērd) 56
bĭght 141
Big Sioux R. 70
Bil-bä′ō 125
Bil-lĭ-tŏn′ 139
Bin′uē R. 141
Bir′ming-ham, Ala. 75; Eng. 120
Bis′cay, B. 115
Bis′krå 143
Bis′marck 71
Black Hills 71
Bloęm′fŏn-teĭn 145
Blue Ridge 44, 61
bluff 44
Boers 145
bog 18
Bō-gō-tä′ 107
Bohmerwald (bē mēr-vält) 120
Boi′se 80
Bō-ĸhä′rå 133
Bo-lĭv′ĭ-å 106, 102, 97
Bŏm-bay′ 135
Boo′thĭ-å 87
Bôr-deaux′ (-dō′) 125
bore 17
Bôr′nē-ō 139
Bōs′nĭ-å 122
Bŏs′pō-rŭs 128
Bôs′ton 57, 56
bottom land 15
Brăh′man-işm 30, 132
Brăh-må-pụ′tra R. 135
branch 14
Brå-zĭl′ 103, 102, 97
Brä′zōs R. 44
Brĕm′ęn 120, 121
Brĕs′lau (-lou) 121
Bridge′pōrt 58
Brĭş′bāne 148
Brit′ish: *see* Great Britain
Brit′ish Co-lŭm′bĭ-å 89
Brock′ton 58
Brook′lўn 62
Brŭnş′wick 75
Brŭs′seļs 124
Bų-eĥå-rest′ 128
Bų′då-pest 122
Bųd′dhĭşm 30, 132, 136
Buenos Aires (bō′nŭs ā′rĭz) 104
Bŭf′fa-lo 63
Bụl-gā′rĭ-å 128, 115, 116
Bụn′dēs-rät 120
Bur′ling-ton, Ia. 70; Vt. 57
Bur′må, Bur-mēse′ 136
bush 147
Bụ-shīre′ 134
Būtte 80
Cā′bēs, G. 141
Cab′i-net 48
Cąĭ′rō 143
Căl-cŭt′tå 135
Căl′gą-ry 89
Căl-i-fôr′nĭ-å 84, 83, 12, 16, 47
Cål-lä′ō 106
căl̃ms 21
Cam-bō′dĭ-å 136
Cam′brĭ-an Mts. 118
Căm′brĭdge 58
Cam′den 65
camels 27, 32, 112, 133, 134, 137, 143, 141
căm′pōs 99
Căn′a-då 86–89, 41, 56, 62
Cå-nā′dĭ-an R. 81
canals 35, 62, 69, 117, 120, 121, 124, 129, 136, 143
Cą-nā′ry Is. 125
Cå-năv′er-ăl, C. 75
Can′çer 19
Căn-tā′brĭ-an Mts. 115
Can-tŏn′ 137
can′yon 15
cape 11, 18
Cape Bret′ŏn (brĭt′-) I. 88
Cape Col′o-ny 145
Cape Town 145
Cape Vērde Is. 125
cap′i-tal 48
Cap′rĭ-corn 19
Cå-rä′cås 107
Car′diff 120
Căr-ĭb-bē′an Sea 9
Căr-pā′thĭ-an Mts. 110
Car-pen-tār′ĭ-å, G. 147
Car′son City, Nev. 81
cas-cāde′ 15
Cascade Mts. 46, 83
Căs′pĭ-an Sea 111
càste 30, 135
cat′a-ract 15
Cats′kill Mts. 62
cattle 32, 52, 59, 73, 79, 83, 92, 103–107, 112, 116, 118, 120–125, 128, 132, 134, 143–145, 148, 149
Cau′cå (cou′-) R. 107
Cau-cā′sian (-shąn) 28, 29
Cau′ca-sus Mts. 110
cave 13
Cā-yĕnne′ 107
Cā-yụ′gå L. 62
Cebu (thā-voo′) 138
Ce′dar Rapids 70
Cĕl′ę-bēş 149
Central Å-mĕr′ĭ-cå, 93, 41
Central Lowland 37, 44
Ce-răm′ 149
Cetinje (tsē′tēn-yā) 128
Ce-vĕnnes′ 124
Cēy-lŏn′ 135
chain 12
Cham-plain′, L. 43, 57
Chärleş′ton, S. C. 74; W. Va. 66
Char′lotte 74
Char′lotte-town 88
Chat-ta-hoo′chee R. 74
Chat-ta-noo′gå 76
Chåu-tau′quå L. 62
Chē-mul′po 137
Chĕs′a-pēake B. 43, 60
Chē-sun′cook L. 55
Chē′vĭ-ôt Hills 118
Chey-ĕnne′ 80
Chĭ-cą′gō 67, 68
Chĭ′le 105, 102
Chim-bō-rä′zō, Vol. 106
Chĭ′nå, Chĭ-nēse′ 136, 51, 83, 107, 113, 132, 138, 139, 148, 149
Chip′pe-wä R. 69
Chrĭs-tĭ-ä′nĭ-ä 122
Chris-tian′i-ty 30, 87, 92, 102, 115, 116, 132
Chụ-bụt′ R. 104
Çin-çin-nä′tĭ 67, 68
cir-cum′fer-ence 6
cities 35, 53, 117
civ-il-ĭ-zā′tion 29, 30, 113, 115, 131
Clēve′land 67
cli′mate 20–23; *see* Heat Belts, Rainfall
cloud 22
cloud′-burst 45
coal 18, 33, 52, 63, 66, 87, 105, 116–124, 129, 132, 135, 137–139, 148, 149
coast 11, 17
Coast Ranges 47
Cō′chin Chī′nå 136
Cod, C. 43
coffee 26, 31, 34, 91–94, 102–104, 133, 135, 138, 139, 144, 145, 149
Cō-lōgne′ 121
Cō-lōm′bĭ-ä 106, 102
Cō-lōm′bō 135
Cō-lōn′ 93
Cŏl-ō-rä′dō 80; plateaus 46; R. 15, 38, 46
Colorado Springs 81
Cō-lŭm′bĭ-å 74; plateaus 46; R. 38, 83, 84
Cō-lŭm′bus, Ga. 75; O. 67
commerce 34, 35, 53, 117, 118, 131
cŏm′pąss 6
Cŏn-cĕp′cion (-shŭn) 105
Con′cord (-kērd) 57
Con′gress 48, 49, 65
Cŏn-nĕct′ĭ-cut 58
Con-stăn-tĭ-nō′ple 128
con′tĭ-nent 9
con-tĭ-nen′tal divide 37; island 9, 27; plateau 9, 10; sea 9; shelf 9
con-tọur′ lines 37
Cō-pęn-hā′ġęn 121
cop′per 33, 34, 52, 53, 69, 80, 87, 92, 94, 103, 117, 118, 120, 125, 137, 138, 145, 148
cor′al 18, 32, 75, 93, 116, 126, 143, 149
Cōr′dō-vå 104
corn 26, 31, 51, 59, 71, 73, 103, 125, 128, 132, 134, 143, 144, 148
Cōr′sĭ-cå 124
Cŏs′sacks 129
Cŏs′tå Rĭ′cå 93
Cō-tō-păx′ĭ, Vol. 106
cotton 31, 34, 51, 72, 74, 75, 77, 91, 103, 117, 128, 132–135, 137, 143–145, 149
Coun′cil Bluffs 70, 71
Cōv′ing-ton 68
crā′ter 12
Crēte 128
cre-vàsse′ 45
Crip′ple Creek 81
Cū′bå 93, 94, 41
Cum′ber-lạnd 65; plat. 75
Cuȳ-å-pē′gå R. 67
Cuzco (cụs′cō) 106
cȳ′clōne 21, 22, 47, 48, 110
Cȳ′prus 108
Czär 129
Dăl′ğĕ-ty 148
Dăl′lås 77
Då-mās′cus 133
Dān′ish: *see* Denmark
Dăn′ūbe R. 122
Dan′ville 66
Dar-dą-nĕlleş′ 128
Dar′ling R. 147
Dăv′ęn-pōrt 70
Daw′son 89
day 6, 19
Day′ton 67
de-gree′ 7
Dek′kąn 134, 135
Dĕl′å-wâre 65; B. 43, 60; R. 61, 44
Dĕl′ĥī 135
del′ta 16
Den′mark, Dān′ish 121, 122, 115, 116, 41, 91, 95
Den′ver 80
de-pend′en-cy 48, 49
deş′ert 24, 112
Deş Moines′ 70
De-troit′ 69
dew 22
di-am′e-ter 6
Dĭ-năr′ic Alps 122
di-rec′tions 6
District of Columbia 65
dĭ-vide′ 14
Dnĭē′per R. 110
Dŏn-e-gąl′ B. 118
Dōr-dōgne′ R. 124
Dōu′rọ R. 125
Dō′ver, Del. 65; N.H. 57
Dŏv-rē-field′ (-fyăl′) 121
drain′age basin 14
Drĕş′den 121
drift 16
drum′lin 16
Dub′lin 120
Dụ-buque′ (-būk′) 70
Dụ-lųth′ 70
Dụ′må 129
Dü′nå R. 115
dune 13
Dŭn-ē′din 149
Dur-băn′ 145
Dutch, *see* Netherlands
earth 5, 6, 19
earth′quake 10–12, 37, 47, 91, 93, 97, 110, 137, 141, 149
east 6
East Central States 66
Eastern Continent 9
East In′dĭeş 138, 149
East St. Lọu′ĭs 68
E′brō R. 115
Ec-uå-dōr′ 106, 102
Ed′ĭn-burgh (-bŭr-ō) 120
Ed′mŏn-tŏn 89
E′ġўpt 143
El′bå 126
Elbe R. 120
El-bụrz′ Mts. 110
el′e-phants 26, 32, 112, 135, 144
el-e-vā′tion 9, 37
E-liz′a-beth 65
El Pā′sō 77
England (ĭn′gland), English 118–120, 41, 102, 115; *see* Great Britain
e-quā′tor 7
e-qua-tō′ri-al calms 21, 22
e′quĭ-nox 19
E′rĭe 64
Erie Canal 62
Ē-rĭ-trē′å 144
e-ro′sion (-zhŭn) 12
Erz′ġę-bīr-ġę (ĕrts′-) 120
Es′kĭ-mōş 39, 41, 88, 91
Es′sęn 121
es′tu-ă-ry 11
Et′nå, Mt. 125
Ēū-phrā′tēş R. 110
Ēū-rā′sia (-shĭ-å) 9, 109
Eurasian life region 26, 111, 112
Ēū′ròpe 9, 108–129
Ev′ąnş-ville 67
e-vap-o-rā′tion 14, 22
Ev′er-ĕst, Mt. 110
Ev′er-glādeş 75
Fąlk′lạnd Is. 107
Fall line 43
Fall River 58
Far′go 71
Fā′rōe Is. 121
fault 11
Fez 143
Fĭ′jĭ Is. 149
Finnş 129
fiôrd (fyôrd) 11, 121
fishing 32, 52, 56, 83–87, 91, 116, 121, 125, 138
flax, 31, 69, 116, 119, 124, 129
Flĕm′ish 124
flood plain 15

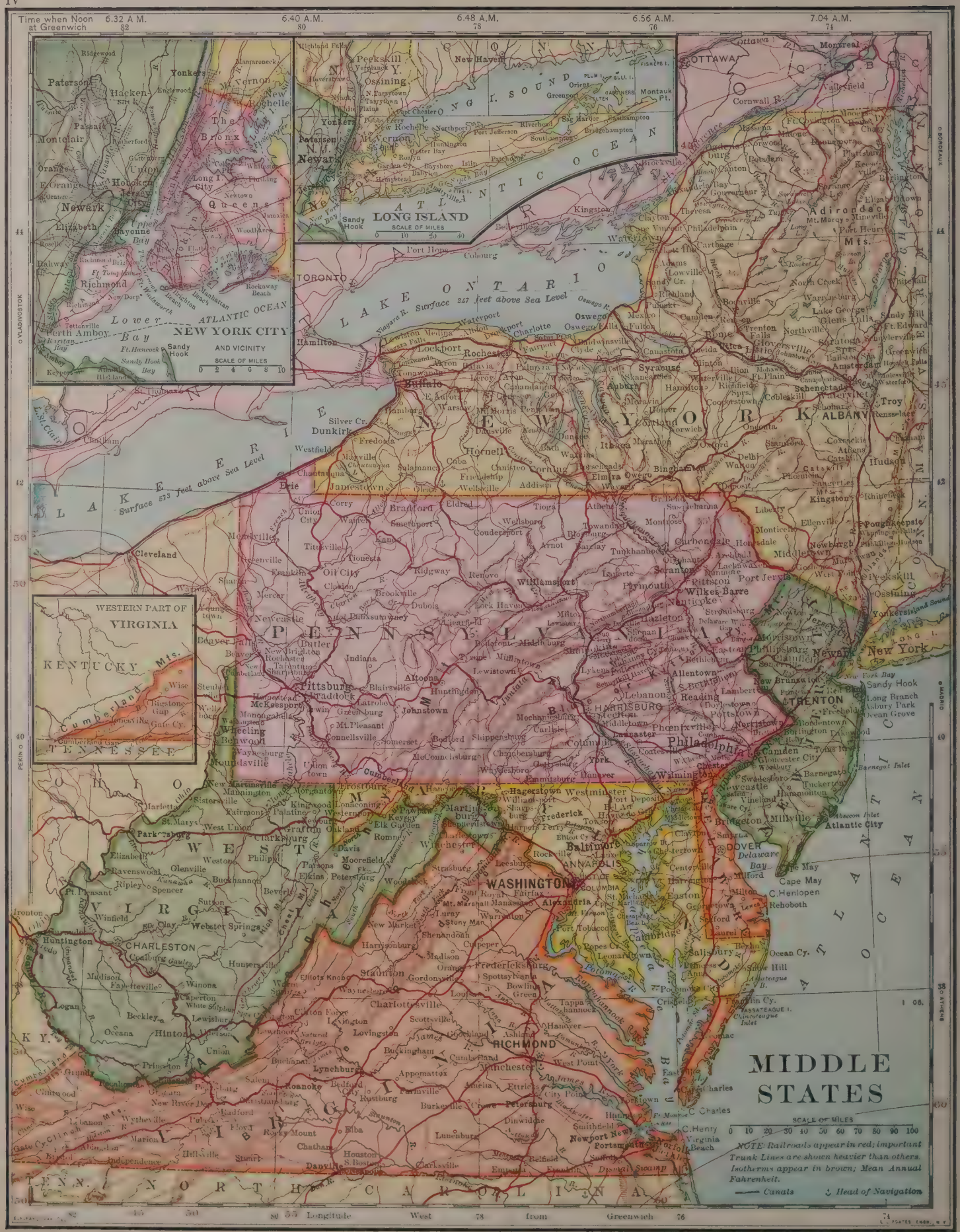
Flŏr'ençe 126
Flŏr'í-dà 75
fog 22
forests 23–27, 33, 52, 85, 87, 91–94, 99, 101, 111, 112, 116, 125, 133, 136, 138, 139, 142, 144–149
Fôr-mō'sà 138
Fort Smith 76
Fort Wāyne 67
Fort Worth 77
fŏs'sil 18
Frànçe, Frĕnch 124, 125, 115, 116, 41, 77, 87, 88, 95, 103, 107, 136, 137, 143–145
Franḳ'fort, Ky. 68
Franz-Josef (fränts-yō'-zef) Land 108
Frā'ṣer R. 87
Fred'er-ic-tŏn 88
fruit 31, 51, 73, 75, 83–87, 91, 93, 94, 105, 116, 118, 120, 122–128, 132–134, 143, 144, 148, 149
Fụ'jĭ-yä'mà 137
Gà-lä'pà-gōs 106
Gal-li'nàs (-yē'), Pt. 97
Găl'vĕs-ton 77
Gạl'way B. 118
Găn'ġēṣ R. 135
Ġà-rōn*ne'* R. 124
Ġĕn-e-see' R. 62
Ġe-nē'và 124
Ġĕn'ō-à 126
Ġeōrġe'town, Guiana 107
Geōr'ġĭ-à 74
Ġēr'mà-ny, German 120, 115, 116, 49, 103, 124, 137, 144, 149
ġeȳ'sĕr 13, 80, 91, 149
*Gh*ạts 134
*Gh*ĕnt 124
ĠĬ-brạl'tar (-tẽr), Str. 141
Gila (hē'là) R. 81
Gĭ-rōnde' R. 124
glā'cier (shẽr) 16, 83, 85, 87, 97, 110, 122, 149
Glās'gow (-kō) 119
goats 32, 106, 112, 116, 125, 133, 134, 143, 145
Gō-dä'và-rĭ R. 134
gold 33, 52, 53, 79, 80, 83, 85, 87, 92, 93, 103, 117, 129, 132, 137, 139, 145, 148, 149
Gŏt*h*'en-burg 122
gov'ern-ment 29, 30, 35, 48, 102, 116, 132
grain 31, 92, 118, 120, 122, 124, 128, 132; *see* Corn, Wheat, etc.
Gram'pĭ-an Mts. 118
grand division 9
Grand Forks 71
Grand Rapids 69
grav'i-ty 6
Great Bā'sin 46
Great Brit*ain*, Brĭt'ish 118–120, 115, 116, 41, 46, 88, 89, 93, 95, 102, 103, 107, 133–137, 139, 143–145, 148, 149
Great Falls 80
Great Lakes 61, 62
Great Plains 45
Great Powers 116
Great Salt Lake 46
Great Valley 44
Greeçe, Greek, Grē'cian 126, 115, 116, 113, 133
Green'land 89, 41
Greens'bo-ro (-bŭr-ō) 74
Green'ville 74
Green'wich (grĭn'ĭj) 7
ground water 13
Guā-dà-là-jà'rà (-*th*ä-là-hä'-) 93
Guạ-dàl-quiv'ir R. 125
Guạ-de-loupe' 95
Guà-dĭ-a'nà (-*th*ē-) R. 125
Guar-dà-fuĭ', C. 141
Guạ-tē-mà'là 93
Guaȳ-à-quil' (-kēl') 106
Guaȳ'màs 93
Gu*i*-ä'nà 107, 102, 98
Gu*i*n'ēa, G. 141
gulf 11
Gulf plain 45
Gulf Stream 23
Gŭth'rĭe 77
ġȳp'sieṣ 128
Hā*gue* 121
Haī-dar-ä-bäd' 135
Hāi'tĭ 94, 41
Hăl'ĭ-fax 88, 89
Hăm'burg 120, 121
Häng'chau' (-chou') 137
Hän'kau' (-kou') 137
Hä-noi' 136
Har'bin 137
Här'rĭs-burg 64
Hart'ford (-fẽrd) 58
Harz (härts) Mts. 120
Hat'tẽr-ás, C. 73
Hà-vän'à 94
Hā'ver-*hill* 58
Hav're 125
Hä-wa*i*'ĭ 149
Hä-wa*i*'ian (-yạn) Is. 149
heat belts 20, 38, 47, 98, 110
heat equator 20
Hĕb'rĭ-dēṣ 118
Hĕl'ē-nà 80
hĕm'ĭ-sphēre 7, 9
Hèr-ät' 134
herding 31, 32, 52, 59, 73, 77, 79, 83, 92, 102, 116, 145, 148
Hẽr-ze-gō-vĭ'nà (-tsā-) 122
high'lạnd 10
hill 11
Hĭ'lō 149
Hĭ-mā'là-yà Mts. 109
Hin'dụ Kụsh' Mts. 110
Hin'dụṣ 134, 135, 107, 148
Hin-dụ-stän' 134
Ho-àng' R. 136
hoar'frost 22
Hō'bart (-bẽrt), 148
Hō'bō-ken 65
hogs 32, 52, 59, 73, 112, 116, 120, 121, 128, 138
Höl'land 121
Hōl'yōke 58
Hŏn'dō 137
Hon-dụ'ràs 93
Hŏng'kŏng' 137
Hō-nō-lụ'lụ 149
horses 27, 32, 52, 68, 73, 92, 101, 112, 132–134, 137, 143, 144
hot spring 13
Hot Springs 76
Họu-sà-tŏn'ic R. 55
Hoūs'tŏn 77
Hŭd'sŏn R. 43, 61
Hŭll 120
Hŭm'bōl*dt* R. 81
Huṇ'gà-ry 122
Hunt'ing-ton 66
Hū'rŏn, L. 68
ĭçe'berg 16, 89
Içe'land 91, 41
I'dà-hō 80
Il-lĭ-nois' 67
Ĭ-lō-ĭ'lō 138
Iṇ'càṣ 101, 102
In'dĭ-à 134, 132, 113
In-dĭ-ăn'à 67
In-dĭ-ạn-ăp'o-lis 67
In'dĭ-an O. 9, 23
In'dĭ-ànṣ 29, 39, 41, 77, 79, 81, 85, 88, 92, 93, 101, 102
In'do-Chĭ'nà 136, 132
In'dŭs R. 134
in'dus-tries 30
in'let 14
International date line 55
I'rō-wà 70
Iquique (ē-kē'kā) 105
Ị-rän', plateau 109
Ir-ä-wä'dĭ R. 110
Ire'lạnd, I'rish 118–120, 49
Ir-kụtsk' 132
iron 33, 34, 52, 59, 69, 70, 73, 87, 94, 116–124, 126, 129, 132, 135, 137, 138
ir-ri-ga'tion 31, 79, 99, 101, 116, 125, 133–135, 138, 143
Īs'lạnd 9, 11, 12
ĭ'so-therm 9
Is-pa-hän' 134
is*th*'mus 9, 11
It'ä-ly, Ĭ-tăl'ian (-yạn) 125, 115, 116, 49, 103, 104, 124, 144
Ith'a-cà 63
Jack'son, Mich. 69; Miss. 75; Tenn. 76
Jack'son-ville 75
Jà-māi'cà 94, 93
Jà-păn', Jăp-a-nēse' 137, 138, 132, 149
Jä'và 139
Jef'fer-son City, Mo. 70
Jẽr'ṣeȳ City 65
Jē-rụ'sà-lĕm 133
jet'ties 77
Jewṣ 28, 30, 128, 129, 132, 133, 142, 143
Jo-hăn'nĕs-bŭrg (yō-) 145
Jō'lĭ-ĕt 68
Jop'lin 71
Ju-ăn' (hụ-) de Fụ'cà 47
Jū-neau' (-nō') 85
jun'gle 112
Jū'rà Mts. 124
Ju-rụ-ä' (zhụ-) R. 103
Jut'lạnd 121
Kä'bụl 134
ka*i*'ṣer 120
Kä-là-hä'rĭ Desert 142
Kal-à-mà-zoo' 69
Kám-chát'ka 131
Kä-mẹ-rụn' 144
Ka-nä'kàṣ 149
Ka-ṇạ'wà*h* R. 44, 66
Kän-dà-här' 134
Kăn'ṣạs 71, 45
Kansas City 70, 71
Kä'rà Sea 109
Kăs-kăs'kĭ-à R. 67
Ka-tä*h*'din, Mt. 55
Ke'nĭ-à, Mt. 141
Ken-ne-bĕc' R. 55
Ken-tuck'y 68
keys 75
Key West 75
k*h*ăn 134
Khär'kōf (кär'-) 129
k*h*e-dīve' 143
Khe-lät' (kẹ-) 134
Khĭn-g*h*ăn' (кĭn-) Mts. 110
Khĭ'và (kē'-) 133
Kĭ-au'chau' (-ou'chou') 137
Kĭ'ef (-yĕf) 129
Kĭl-ĭ-män-jä'rō, Mt. 141
Kim'ber-ley 145
king 30
Kio'len (chē'-) Mts. 110
Kĭr-ġ*h*ĭz' Steppe 132
Kiu'shụ' (kyụ-) 137
Klŏn'dīke 85, 89
*Kn*ŏx'ville 76
Kŏṇ'gō R. 141
Kongo State 144
Koo'tẽ-nāi R. 80
Kō-rē'à 137, 132
Kō-yụ'kụk R. 85
Kuĕn-lụn' 109
Kụ-ro-shĭ'wō 23
Kwäng'chau' (-chou') 137
Kyō'tō 138
Lab-rà-dōr' 89
La Crôsse' 69
Là'dō-gà, L. 111
la-goon' 17
Lä Guāī'rà 107
lake 14
Lake plains 44
land 9, 20
Lan'sing, Mich. 68
Lä'ōs 136
Lä Păz' 106
Lapps 129
Lär'à-mĭe 80
Lá-re'dō 77
Läs'sà 137
Lat'ins 115
lat'i-tude 7
Lau-rĕn'tian (-shĭ-ạn) glacier 17, 43, 44, 59
Laurentian plateau 37, 87
lä'và 12, 18
lava fields 37
Law'rençe 58
lĕad 33, 34, 59, 79, 87, 92, 117, 120, 125, 126, 139
Lēad 71
Lĕad'ville 81
Lĕav'en-worth 71
Leeḍṣ 119
Leīp'zig (-sĭk) 121
Le'nà R. 110
lĕv'ee 45
Lew'is-ton 56
Lex'ing-ton, Ky. 68
Lī-bē'rĭ-a 144
Lĭb'ỹ-an Desert 143
Liech'ten-stein (lēĸ'-) 122
Lĭ-ege' (-āzh') 124
life regions 24–27
Lĭ*le* 125
Lĭ'mà 106
Liṇ'cọln 71
Lĭp'ä-rĭ Is. 125
Lịs'bŏn 125
Little Rock 76
Liv'er-pool 119
ll*ä*'màṣ 25, 26, 32, 101, 106
ll*ä*'nōṣ 24, 101, 102
Lō'gạn 81
Loire (lwär) R. 124
Lŏn'dọn 119, 30
Long I. 43
lŏn'ġĭ-tude 7
Lōs Aṇ'ġĕl-ēs 85
Lọu-ĭ-ṣĭ-ä'nà 76
Lọu'ĭs-ville 68
Lōw'ĕll 58
low'lạnd 10, 20, 37
Lŭ'beck 120
Lŭck'now 135
lumbering 33, 52, 56, 59, 73, 79, 83, 88, 89, 105, 116, 136, 138, 147, 149
Lŭ-ray' caverns 66
Lŭx'em-burg 120
Lụ-zŏn' 138
Lỹnch'burg 66
Lỹnn 58
Lȳ'ọṇṣ 125
Mà-cà'ō 137
Mác-kĕn'zĭe R. 38
Mack'ĭ-nạc, Str. 68
Mc-Kin'ley, Mt. 37
Mā'cọn 75
Măd-à-găs'cár 145
Mà-dĕ'rà Is. 125; R. 98
Măd'ĭ-son 69
Mà-drăs' 135
Mà-drĭd' 125
Mäg-dà-le'nà R. 99
Mà-ġĕl'lạn, Str. 97
Măg'yars 122
Mā*ine* 56
Mà-käs'sár, Str. 138
Măl'à-gà 125
Ma-lay' penin. 136
Ma-layṣ' 28, 29, 136, 138, 139, 145, 148, 149
Mà-nä'guà 93
Man'ches-ter, Eng. 119; N.H. 57
Man-chụ'rĭ-à 137
Măn'dà-lay 136
Man-hat'tạn I. 62
Mà-nĭl'à 138
Man-ī-tō-bä' 88, 89
manufacturing 34, 35, 53, 56, 60, 73, 92, 117, 118, 135, 138, 148.
Mä'o-rĭṣ 149
Mä-rà-ca*i*'bō 107
Mä-rà-jo' (-zhō') I. 99
Mä-rän-hão' (-youn') 104
Mar'mo-rà, Sea of 128
Mar-se*illes*' 125
Mar-tā-bän', G. 136
Mar'thàs Vĭne'yard 57
Mar-tĭ-nique' (-nēk') 95
Ma'rỹ-land (mĕr'-) 65
Măs-kăt' 133
Măs-sà-chū'setts 57
Mat-à-gōr'dà B. 77
Mau-mee' R. 66
Mau-rĭ'ti-us (-rĭsh'ĭ-) 145
me-an'der 15
Mec'cà 133
Mẹ-del-lin' (-*th*āl-yēn') 107
Mĕd-ĭ-tẽr-rā'ne-an 9
Mẹ-kŏng' R. 110
Mel'bourne 148
Mel'ville penin. 87
Mem'phis 76
Mẹ-năm' R. 136
Mē-nŏm'ĭ-nee R. 69
Mĕr'ĭ-den 58
me-rid'ĭ-ạn 7
Meridian 75
Mẽr'rĭ-mac R. 57
Me-sà'bà Range 70
Mĕs-o-po-tā'mĭ-à 109, 113
Mẽ*use* R. 124
Mex'ĭ-cō 91–93, 41; (city) 92
Mī-ăm'ĭ R. 67
Mịch'ĭ-gạn 68
Middle States 62
Mĭl'ạn 126
Mil-wau'kee 69
Mĭn-dà-nä'ō 138
mining 33, 52, 59, 62, 73, 79, 83, 87, 92, 102, 116, 132, 137, 138, 145, 148, 149
Mĭn-nē-ăp'o-lis 70
Mĭn-nē-sō'tà 69, 70
Mique-lôn' (mēk-) 89
mĭr 129
Mĭs-sĭs-sĭp'pĭ 75; R. 38, 45, 62
Mĭs-sọu'rĭ 70; R. 38, 62
Mitch'ell, Mt. 37, 44
Mō-bīle' 75
Moero (mwā'ro), L. 141
Mo-hăm'med-an-ĭṣm 30, 116, 132, 143
Mo'hawk R. 62
Mō-līne' 70
Mōl-len'dō (-yĕn'-) 106
Mō-lŭc'càṣ 138, 149
Mŏn'à-cō 125
mŏn'are*h*-ỹ 30
Mŏn-gō'lĭ-à 137, 109
Mŏn-gō'lĭ-anṣ 28, 29, 136
Mŏn-o-moy' Pt. 57
Mō-nŏn-gà-hē'là R. 63
mŏn-soon' 22
Mŏn-tā'nà 80, 33, 46
Mŏ*nt* Çẹ-nĭs' 124
Mŏn-tẹ-ne'grō 128, 115
Mŏn-tē-vĭd'ē-ō 104
Mŏnt-gòm'er-ỹ 75
Mŏnt-pē'lĭ-er, Vt. 57
Mŏnt-rē-ạl' 88, 89
Moorṣ 143
mo-raine' 16
Mòr'ay Firth 118
Mō-rŏc'cō 143
Mōs'cō*w* 129, 30
moun'tain 11, 12
Mō-zạm-bique' (-bēk') Channel 141
Mụk-dĕn' 137
Mū'nĭe*h* 121
Mŭr'raȳ R. 147
Mus-kīn'gum R. 66
Mus-kō'ġee 77
Năntes 124
Nan-tuck'et 57
Nā'pleṣ 126
Nar-ba'dà (nŭr-bŭd'-) R. 134
Nā'r-rà-găn'sett B. 59
Năsh'ū-à 57
Năsh'ville 76
Nà-tāl' 145
Nătch'ĕz 75
natural bridge, 13, 66
natural gas 18
Nē-brās'kà 71
nē-grī'tōṣ 29
ne'groes 29, 39, 41, 73, 94, 102, 142–145
Nel'son R. 38
Ne-pal' 135
Nĕth'er-lạndṣ, Dutch 121, 115, 116, 95, 102, 139, 141, 149
Neūse R. 73
Nē-vä'dà 81
New'ark (-ẽrk) 65
New Bed'ford (-fẽrd) 58
New Brĭt'*ain* 58
New Brŭṇṣ'wick 88
New Căl-e-dō'nĭ-à 149
New'cas-*tle* 120
New England 55
New'foŭnd-lạnd 89, 32
New Guạ-tē-mä'là 93
New Gu*i*n'ēa 149
New Hamp'shĭre 57, 43
New Hā'ven 58
New Hĕb'rĭ-dēṣ 149
New Jẽr'ṣeȳ 64
New Mex'ĭ-cō 81
New Or'le-ạnṣ 76
New'pōrt, Ky. 68; R.I. 59
Newport News 66
New South Wāleṣ 148
New York (city) 62, 63, 35; (state) 62
New York Bay 43, 60
New Zē*a*'lạnd 149
Ngà'mĭ, L. 141
Nī-ăg'à-rà R. 61, 62
Nĭ-cà-rä'guà 93
Nĭ'ger R. 141
Nĭ-ġē'rĭ-à 144
Nile R. 141
Nizhni (nyēz'nyē) Nôv'-gō-rod (-rōt) 129
Nōme 85
Nor'folk (-fạk) 66
north 6
North À-mĕr'ĭ-cà 37-95
North American life region 26, 38, 39
North Căr-ō-lī'nà 73, 74
North Dà-kō'tà 71
Northeastern Section 55–59
Northern Section 59–71
North'men 115
North Star 6
Northwestern valleys 47
Nor'way, Nor-wē'ġĭ-an 121, 122, 115, 116
Nō'và Scō'tia (-shĭ-à) 88
Nueces (nwā'sĕs) R. 77
Ny-ās'sà (nē-), L. 141
Oak'lạnd 85
ō'à-sis 112
Ŏb R. 110
ō'cean (-shạn) 9, 27
ocean currents 23
o-ce-an'ic island 9, 12, 27
Oc-mŭl'ġee R. 74
O-cō'nee R. 74
O'der R. 120
O-dēs'sa 129
Og'dĕn 81
O-ġee'chee R. 74
O-hĭ'o 66; R. 62, 67, 68
O-ke-fi-nō'kee Swamp 74
O-kh*o*tsk' Sea 132
Ōk-là-hō'mà 77
O-lỹm'pĭ-a, Wash. 83
O'ma-*h*a 71
O-măn' 133
Ómsk 132
O-nē'gà, L. 111
O-nei'dà L. 62
On-tā'rĭ-ō 88
ooze 18
O-pōr'to 125
O-rän' 143
Ôr'ange (-ĕnj) R. 141
Orange River Colony 145
or'bit 19
ore 33
Or'ē-gŏn 84
O-rĭ-ĕn'tal life region 26, 112

O-rĭ-nō'cō R. 99, 101
O-rĭ-za'ba (-sä'vä), Mt. 91
Ork'neў Is. 118
O'şä-kä 138
Osh'kŏsh 69
Os-wē'gō R. 62
Ot'ąa-wą 88
outlet 14
ox'bow loop 15
oys'ters 32, 52, 59, 65, 116
O'zärk Mts. 45, 70, 76
Pą-cif'ic 9. 23
Pacific coast region 46
Pacific Section 82–85
pā'gąnş 30
Pą-lēr'mō 126
Pă-mīr' plateau 109
Păm'lĭ-cō Sd. 73
pam'pąş 24, 101, 102, 104
Pan-ą-mą' 93
Pą-naў' 138
Pap'ų-ąnş 29
Pą-rą' 104; R. 99
Pă-rą-guąў' 105, 102
păr'ąl-lel 7
Păr-ą-măr'ĭ-bō 107
Pä-rą-nä' R. 99
Pą-rĭ'ną, C. 97
Păr'ĭs 125
park 46, 80
Par'kerş-burg 66
Par'lĭą-ment 119
Par'thē-nŏn 128, 126
Păt'er-son 65
Paw-tuck'et 59
pearls, 133, 134, 149
peat 18
Pę'chĭ-lī', G. 136
Pę'cōs R. 81
Pē-dee' R. 74
Pē-king' 137
Pem-a-dum'cook L. 55
pen-in'sū-la 11
Pĕn'nine chain 118
Penn-syl-vā'nĭ-ą 63, 33, 59
Pē-nŏb'scŏt R. 56
Pen-są-cō'lą 75
Pe-ō'rĭ-ą 68
Per-dī'do R. 75
Pēr-nam-bų'cō 104
Pēr'sia (-shą) 133
Perth 148
Pē-rų' 106, 102
Pē'terş-burg 66
pe-tro'le-um 18, 52, 53, 63, 67, 85, 87, 106, 117, 129,132
Phil-ą-dĕl'phĭ-ą 64
Phil'ĭp-pīne Is. 138, 28, 29
Phœ'nix (fē'-) 81
Pĭēd'mŏnt region 43
Pĭerre, S. Dak. 71
Pĭl-co-mā'yō R. 99
Pĭn'dus Mts. 115
Pine Bluff 76
Pitts'burg 64
Plă'tą R. 99, 102
plą-teau' (-tō') 9
Plateau Section 78–81
Plătte R. 71
po'lar circle 19
pole 6
Pōn'çe 94
pond 14
Pŏnt-char-trāin', L. 77
Pope 115
pop-u-lā'tion 28, 39, 49, 101, 113, 131, 153
pōr'tāğe 38
Pōrt Ar'thur 137
Pōrt E-liz'ą-beth 145
Pōrt'ląnd, Me. 56; Ore. 84
Pōr'tọ Ą-lę'grē 104
Pōr'tō Rĭ'cō 94, 41
Pōrt Să-ĭd' 143
Pōrts'mouth, Va. 66
Pōr'tū-gąl, Pōr'tū-ğuēşe, 125, 115, 116, 102, 137, 144, 145, 149
Pō-tō'mąc R. 61, 65, 66
Pō-tō-sī' 106
Prāğue 122
prāi'rĭe 24
Prairie plains 45
prĕş'i-dent 30, 48
Prē-tō'rĭ-ą 145
prevailing westerlies 21
Prĭ-bĭ-lŏf' Is. 85
prime meridian 7
Prince Ed'ward I. 88
prŏm'ŏn-to-ry 11
Prŏv'i-dençe 59
Prō'vo City 81
Prussia (prŭsh'ą) 120
Pruth R. 128
public land 48
Pue'blą 93
Puĕb'lō 81
Pū'ğĕt Sd. 47, 83
Pųn'tą Ą-rę nąs 105
Pų-rųs' R. 103
Pŷr'ē-neeş 110
Quē-bĕc' 88
Queen Char'lotte Is. 87
Queenş'ląnd 148
Quĭn'cy (-zĭ) 68
Quĭ'tō (kē'-) 106
races 28, 29
Rą-cīne' 69
railroads 34, 35, 53, 89, 92, 94, 103, 117, 131, 135, 136, 138, 145, 148
rain 22, 38, 48, 98, 110, 147
Rāi'nĭer, Mt. 46
Rą'leĭgh 74
range 11
Rāñğe'ley Lakes 55
Rān-goon' 136
rap'ids 15
Rĕad'ing 64
Red R. 70, 71
reef 18
Re-ğī'ną 89
Reĭchs'tăg 120
re-lĭ'ğion 30
Rē'nō 81
re-pub'lic 30
reş-er-vā'tions 79
Re-ūn'ion (-yŭn) 145
rev-o-lu'tion 19
Rhīne R. 120
Rhōde Is'ląnd 59
Rhō-dē'şi-ą 145
Rhône R. 124
rice 31, 73, 91, 94, 125, 134–139, 143, 144, 149
Rich'mond 66
Rĭ'gą 129
Rĭ'o dę Ją-neĭ'rō (zhą-) 104
Rĭ'o dę lą Plą'tą 99
Rĭ'o Grän'dę 38
Rĭ'o Ne'grō 99
river 14–16
Rō-ą-nōke' 66
Rŏch'es-ter 63
Rock'ford (-fērd) 68
Rock Is'ląnd 70
rock layers 11, 18
Rock Springs 80
rock waste 12, 13
Rocky Mountain highland 37, 45, 46, 91
Rocky Mts. 37, 45, 53, 79
Ro-ma'no, C. 75
Rōme 126, 115, 30
Rō-są'rĭ-ō 104
ro-tā'tion 6
Rŏt'ter-dam 121
Rọu-mā'nĭ-ą 128, 115, 116
rubber 26, 33, 93, 101, 103, 106, 112, 139, 142, 144, 145
Russia (rŭsh'ą) 128, 132, 115, 116, 41, 137
Rut'ląnd 57
rye 31, 116, 120, 129
Są-bīne' R. 44, 76
Sąco R. 55
Săc-rą-mĕn'tō 85
Săg'i-naw 69
Să-hą'rą 143
St. Au'gŭs-tīne 75
St. Clăir, L. 68
St. Croix R. 69
St. Etienne (săn-tā-tyĕn') 125
St. Hĕ-lē'na I. 141
St. John 88, 89
St. Johnş 89
St. Jo'seph 70
St. Law'rençe R. 38, 88
St. Lọu'is 70
St. Mā'ryş Canal 69
St. Paul 70
St. Pē'terş-burg 129
St. Pierre (săn pyâr') 89
St. Roque (rōk), C. 97
Să-ĸhą-lin' (-lyēn') 137
Są-lä'do (thō) R. 104
Să'lem, Mass. 58; Ore. 84
Să-lō-nī'kī 128
salt 62, 66, 68, 117, 120, 122, 129, 137, 144
Salt Lake City 81
Säl-vą-dōr' 93
Säl-win' R. 110
Să-mō'ą Is. 149
Săn Ăn-tō'nĭ-ō 77
Săn Bĕr-năr-dī'nō Range 84
Săn Bläs', C. 75
sand dune 13
Săn Dĭ-ē'go 85
sandy hook 18
Săn Frăn-çĭs'cō 84
Săn'gre dę Crĭs'tō Mts. 80
Săn Joaquin (wä-kēn') 84
Săn Jo-sę' (hō-), Cal. 85; Costa Rica 93
Săn Jų-ăn' (hų-) 94
Săn Mą-rĭ'nō 126
Săn Säl-vą-dōr' 93
Săn'tą Fe' 81
San-tee' R. 74
Săn-tĭ-ą'gō 105
Săn-tĭ-ą'gō dę Cų'bą (-vą) 94
Săn'tō Dō-mĭn'gō 94
Săn'tos (-tọsh) 104
São (soun) Frăn-çĭs'cọ (-sēsh'-) R. 99
São Paulo (soun pou'lọ) 104
Săr-dĭn'ĭ-ą 125
Săs-kătch'e-wąn 88, 89; R. 38
sav'ą-geş 29
Să-vą'ĭ-ī 149
Să-văn'nąh 74
să-văn'nąş 99
Seăn-dĭ-nā'vĭ-an glacier 17
Scandinavians 122
Seĥę-nĕc'tą-dy 63
Seĥųyl'kill R. 64
Scī-ō'tō R. 67
Seot'ląnd 118–120
Serăn'ton 64
scrub 147
sea 9, 20, 22, 23
sea'şonş 19
Sē-ăt'tle 83
Sē-bā'gō L. 55
sed'i-ment 15, 18
See'ląnd 121
Seine R. 124
Sĕm'ĭtes, Sĕm-ĭt'ic 28
Sĕn'e-cą L. 62
Se-ọul' 137
Sĕr'vĭ-ą 128, 115, 116
Sĕv'ern R. 118
Sĕv'ĭlle 125
shăh 134
Shăng-hă'ĭ 137
Shą'rĭ R. 141
She-boy'gąn 69
sheep 32, 52, 80, 92, 104, 106, 112, 116, 118, 120, 124, 125, 128, 133, 134, 137, 143–145, 148, 149
Shĕf'fĭĕld 120
shĕĭk 133
Shĕt'ląnd Is. 118
Shĭ'kō-kų 137
Sho-shō'nē Range 80
shŏtts 142
Shrēve'pōrt 77
Sĭ R. 136
Sĭ-ăm' 136
Si-bē'rĭ-ą 132
Sĭç'i-ly 125
Sĭd'rą, G. 141
Sĭ-ĕr'rą de Guą-dar-rą'mą (-thär-) 125
Sĭ-ĕr'rą Lē-ō'nē 144
Sĭ-ĕr'rą Mą'drę 91
Sĭ-ĕr'rą Mō-rę'ną 115
Sĭ-ĕr'rą Nē-vą'dą 46, 53, 83
silk 34, 65, 116, 117, 122–126, 132, 133, 137, 138
sil'vąş 99, 101, 103
silver 33, 52, 53, 79, 87, 92, 103, 117, 120, 137, 138, 148
Sĭn-gą-pōre' 136
Sĭọux City 70
Sĭọux Falls 71
Sĭ-säl' hemp 91, 92
Sit'ką 85
Sĭ-ųt' 143
Skăg'way 85
Skee'ną R. 87
Slăvş, Slą-vōn'ic 115, 128, 129
Smyr'ną (smēr'-) 133
Snake R. 46
snow 22, 16
Sō'fĭ-ą (-yą) 128
soil 12, 13
Sōl'o-mon Is. 149
sol'stĭçe 19
Sol'way Firth 118
Sō-mä'lĭ-lănd 144
Soo Canal 69
source 14
South Ą-mĕr'ĭ-cą 96–107
South American life region 25, 99, 101
South Aus-trā'lĭ-ą 148
South Bend 67
South Căr-ō-lī'ną 74
South Dą-kō'tą 71, 45
Southern Section 72–77
South O'mą-hą 71
Spāin, Span'ish, Span'iards (-yērdz) 125, 115, 116, 41, 77, 81, 92–94, 102, 138
Spar'tąn-burg 74
spit 18
Spō-kăne' 83
sponges 32, 116, 126, 143
spring 13; (season) 19
Spring'fiĕld, Ill. 68; Mass. 58; Mo. 71; O. 67
standard time 55
Stä-nō-voi' Mts. 110
state 48, 49
Stăt'en I. 62
steel 33; *see* iron
stĕppe 24, 111
Stĕt-tĭn' 121
Stĭ-kīne' R. 87
Stŏck'hōlm 122
Stŏck'ton 85
storm center 47
strait 9
Straits settlements 136
Străss'burg (-bųrĸ) 124
stream 14–16
Strōm'bō-lĭ 125
Sų'cre 106
Sų-dăn' 144, 143
Sų-ēz' 143
sugar 31, 34, 51, 76, 91, 93, 94, 103, 120, 136, 138, 139, 143–145, 148, 149; *see also* Beets.
Sų-lä-ĭ-män' Mts. 110
sul'tan 128, 143
Sų-lų' Sea 138
Sų-mā'trą 139
summer 19
sunrise and sunset line 6
Sū-pē'rĭ-or (-ēr) 69, 70
Sus-quę-hăn'ną R. 61
Sūt'lĕj R. 134
Sū-wą'nee R. 75
Swē'den, Swēd'ish 121, 122, 115, 116
Swit'zer-ląnd, Swiss 122, 124, 115, 116
Sŷd'ney 148
Sŷr'ą-cūse 63
system 12, 14
Tą-brĭz' 134
Tą-cō'mą 83, 35
Tą-cŏn'ic Mts. 57
Tā'gus R. 125
Tā'hōe, L. 81
Tăl-lą-hăs'see, Fla. 75
Tam'pą 75
Tän-gän-yī'kä, L. 141
Tä-pą-jōs' (-zhōsh') 103
Tāsh-kend' (-kĕnt') 132
Tăs-mā'nĭ-ą 148
Tăun'ton 54
Tau'rus Mts. 110
Tchăd, L. 141
tea 31, 34, 135, 137–139
Te-gų-cĭ-gäl'pą 93
Tĕ-herän' 134
Tę-huän-tę-pĕc', Isth. 92
Tĕn-nĕs-see' 75; R. 44
ter'mi-nal mo-rāine' 16
Tĕr're Haute' (hōt') 67
tĕr'ri-to-ry 48, 49
Teū-tŏn'ic 115
Tĕx'ąs 77
Thames (tĕmz) R. 118
Thĭ-än' Shän' 109
Tĭ-bĕt' 137, 109
tide 17
Tide'wa-ter region 43
Tĭ-ĕn'tsĭn' 137
Tĭ-ĕr'rą dĕl Fue'gō 97
Tĭflis (tyē-flyēs') 133
Tĭ'grĭs R. 133
tilted blocks 46
Tĭ-mōr' 149
tin 33, 34, 103, 117, 118, 136, 139, 148
Tĭt-ĭ-cā'cą, L. 97, 106
tobacco 26, 51, 59, 66, 91, 94, 103, 128, 129, 133, 137, 138, 139, 144
Tō-căn-tĭns' R. 99
Tō'kyo (-ke-ō) 138
Tō-lē'dō 67
Tom-big'bee R. 75
Tō'ngą Is. 149
Tŏn-kĭn' 136
Tō-pē'ką 71
Tō-rŏn'tō 88
trade winds 21, 22
Trăns-cau-cā'sia (-shĭ-ą) 132
Trăns-väal' Colony 145
Trăn-syl-vā'nĭ-an Alps 122
Tren'ton 65
trib'u-ta-ry 14
Trĭ-ēs'te 122
Trĭn-ĭ-dăd' 94, 93
Trip'o-lĭ 143
trŏp'ic 19
tropical calms 21
Troy 63
Tūc-sŏn' 81
Tų-cų-măn' 104
tūn'drą 24
Tū'nis 143
Tū'rĭn 126
Tųr-kes-tān' 132, 137
Tur'key, Turks 128, 133, 143, 115, 116, 126, 134
Tų-tų-ĭ'lą 149
U'na-ka Mts. 73
United Kingdom 118
United States, American 41–85, 34, 89, 92, 94, 103, 115, 137, 138, 149
up-heav'al 10, 11
Ū'pō-lų 149
Ū'ral Mts. 110, 117, 129
Ū-rų-guąў' 104, 102
Ū'tąh 81, 46
Ū'tĭ-cą 63
Văal R. 145
Vą-len'cia (-shĭ-ą), Spain 125; Venez. 107
val'ley 11, 14, 15
Văl-pą-rąi'sō 105
Van-cọu'ver 89, 87
va'por 22
Vat'i-cąn 126
vegetation regions 23, 24
veld't 145
Vĕn-ē-zuē'lą 107, 102, 95
Vĕn'içe 126
Ve'rą Cruz (crųs) 93
Vērde, C. 141
Vēr-mŏnt' 57
Vē-sū'vĭ-ŭs, Mt. 125
Vicks'burg 75
Vic-tō'rĭ-ą (city) 89; (state) 148
Victoria Falls 141
Vĭ-ĕn'ną 122
Vik'ings 115
Vir-ğĭn'ĭ-ą 66
Vis'tū-lą R. 115
Vlą-dĭ-vos-tôk' (-dyē-vąs-) 132
vol-can'ic cone 12
vol-cā'no 12, 37, 46, 91, 93, 97, 110, 125, 137, 139, 141, 149
Vōl'gą R. 110
Vosges (vōzh) Mts. 124
Vųl-cā'nō 125
Wą'băsh R. 67
Wā'cō 77
Wāleş 118
Wąl'ker L. 81
Wąl'lą-wąl'lą 83
Wąr'saw 129
Wą'sătch Mts. 81
Wash'ing-ton (city) 65, 48, 49; (state) 83, 32, 35; Mt. 43
Wą'ter-bur-y (-bĕr-) 58
water gap 44
waves 17
wĕa'th'er-ing 12
We'ĭ-hai-wę'ĭ 137
Wel'land Canal 62
Wel'ling-ton 149
Wen'ner (vĕn'-), L. 121
We'şer (vā'-) R. 120
West Central States 69
Western Aus-trā'lĭ-ą 148
Western Continent 9
West In'dĭeş 93–95, 41
West Point 63
West Vir-ğĭn'ĭ-ą 66
Wet'ter (vĕt'-), L. 121
wheat 31, 51, 59, 70, 83, 87, 88, 103, 116, 124, 125, 128, 129, 132, 134, 135, 137, 143–145, 148
Wheel'ing 66
Wĭch'ĭ tą 71
Wilkes-Bär're (-rĭ) 64
Wil-lä'mette R. 83, 84
Wil'ming-ton, Del. 65; N.C. 74
winds 20–22, 12, 13
Win-ne-pe-sau'kee L. 55
Win'nĭ-peg 89; L. 87
WĪ-nō'ną 70
Win'ston 74
winter 19
Wis-con'sin 69
Woon-sock'et 59
Wọrces'ter 58
Wŷ-ō'ming 80, 13, 32
Xin-gų' (shĕn-) R. 103
Yăng'tzē (-tsē) R. 136
Yä-pų-rä' R. 103
Yăz'oo R. 75
year 19
Yel'lōw-stōne National Park 80
Yĕn-ĭ-sę'ĭ R. 110
Yēz'o 137
Yō-kō-hä'mä 138
Yōn'kerş 63
Yō-sĕm'ĭ-tē valley 83
Youngs'town 67
Yų-cą-tän' 91
Yų'kŏn 89; R. 38
Zą'grōs Mts. 110
Zām-bę'zi R. 141
Zän-zĭ-bär' 145
zinc 33, 34, 59, 117, 120, 125
zone 19, 20
Zuĭ'der Zee' 121
Zų'rĭch 124

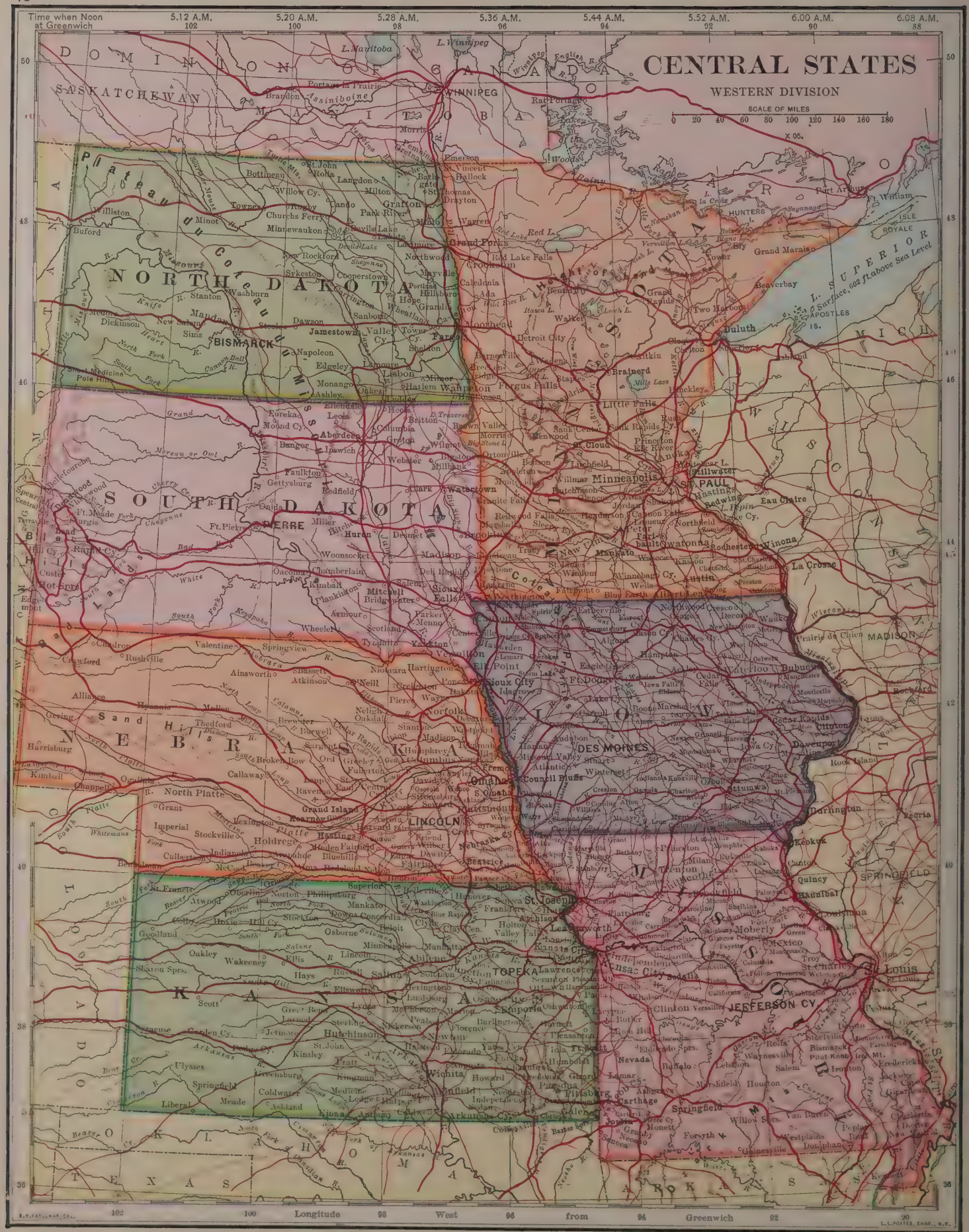
NORTH AMERICA
SCALE OF MILES
0 100 200 300 400 500 600 700 800 900 1000
NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.
Canals
Head of Navigation
ISTHMUS OF PANAMA
SCALE OF MILES
0 5 10 15
Longitude West from Greenwich
Time when noon at
TROPIC OF CANCER
EQUATOR
ARCTIC CIRCLE
DOMINION OF CANADA
UNITED STATES
MEXICO
CENTRAL AMERICA
WEST INDIES
GULF OF MEXICO
HUDSON BAY
BAFFIN BAY
GREENLAND
ALASKA
PACIFIC OCEAN
ATLANTIC OCEAN
CARIBBEAN SEA
PANAMA
PANAMA BAY
OTTAWA
WASHINGTON
HAVANA
NEW GUATEMALA
SAN SALVADOR
MANAGUA
SAN JOSE
CARACAS
BOGOTA
ST. JOHNS
NEWFOUNDLAND
Montreal
Quebec
Halifax
Boston
New York
Philadelphia
Chicago
San Francisco
Portland
Seattle
Vancouver
Victoria
Winnipeg
Minneapolis
St. Paul
Omaha
Denver
Kansas City
St. Louis
New Orleans
Galveston
Mexico
Monterey
Matamoros
Havana
Kingston
Port au Prince
Santiago de Cuba
Jamaica
Bermuda Is.
Bahama Is.
Greenland
Iceland
Reykjavik
Godthaab
Julianehaab
Frobisher Bay
Resolution I.
Chesterfield Inlet
Fort Churchill
Fort Simpson
Fort McMurray
Fort Resolution
Fort Rae
Fort Good Hope
Fort Yukon
Dawson
Klondike Region
Mt. McKinley
Mt. Wrangell
Mt. Fairweather
Mt. Brown
Mt. Hooker
Mt. Logan
Mt. St. Elias
Yukon R.
Mackenzie R.
Saskatchewan R.
Columbia R.
Colorado R.
Rio Grande
Mississippi R.
Missouri R.
Ohio R.
Hudson R.
St. Lawrence R.
Great Slave L.
Great Bear L.
Athabasca L.
Lake Winnipeg
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
Great Salt L.
Lake Nicaragua
Lake Titicaca
Panama Canal
Gatun
Gatun L.
Colon
Panama
Tiger Hill
Cerro Gigante
Taboga
Taboguilla I.
Chagres R.
Chiriqui
Bocas del Toro
Port Limon
Puerto Cortez
Trujillo
Belize
Tegucigalpa
Acapulco
Vera Cruz
Tampico
Monterey
Chihuahua
Durango
Mazatlan
La Paz
Guaymas
Hermosillo
Culiacan
Guadalajara
Puebla
Oaxaca
Campeche
Yucatan
Merida
Key West
Nassau
Cuba
Haiti
Jamaica
Puerto Rico
Trinidad
Barbados
Curacao
Caracas
Maracaibo
Valencia
Barranquilla
Cartagena
Medellin
Cali
Popayan
Quito
Guayaquil
Lima
Callao
Arequipa
Cuzco
Iquique
Valparaiso
Santiago
Buenos Aires
Montevideo
Rosario
Cordoba
Mendoza
Asuncion
La Paz
Sucre
Potosi
Oruro
Cochabamba
Santa Cruz
Manaos
Para
Pernambuco
Bahia
Rio de Janeiro
Santos
Pelotas
Porto Alegre
Rio Grande do Sul
Rio Negro
Rio Colorado
Rio Salado
Rio Dulce
Rio Paraguay
Rio Parana
Rio Uruguay
Rio Madeira
Rio Tapajos
Rio Xingu
Rio Tocantins
Rio Sao Francisco
Rio Doce
Rio Paraiba
Rio Pilcomayo
Rio Bermejo
Rio Grande
Rio Negro
Rio Branco
Rio Purus
Rio Jurua
Rio Ucayali
Rio Huallaga
Rio Marañon
Rio Napo
Rio Putumayo
Rio Caqueta
Rio Meta
Rio Guaviare
Rio Vichada
Rio Orinoco
Rio Caroni
Rio Apure
Rio Cauca
Rio Magdalena
Rio Sinu
Rio Atrato
Rio Chagres
Rio Grande de Nicaragua
Rio Coco
Rio Motagua
Rio Ulua
Rio Lempa
Rio Grande de Tehuantepec
Rio Balsas
Rio Grijalva
Rio Usumacinta
Rio Panuco
Rio Grande de Santiago
Rio Lerma
Rio Yaqui
Rio Mayo
Rio Fuerte
Rio Sonora
Rio Gila
Rio Colorado
Rio Grande
Rio Pecos
Rio Canadian
Rio Arkansas
Rio Red
Rio Platte
Rio Missouri
Rio Ohio
Rio Tennessee
Rio Cumberland
Rio Kentucky
Rio Wabash
Rio Illinois
Rio Des Moines
Rio Minnesota
Rio Red
Rio Assiniboine
Rio Saskatchewan
Rio Athabasca
Rio Peace
Rio Liard
Rio Yukon
Rio Kuskokwim
Rio Nushagak
Rio Kvichak
Rio Naknek
Rio Ugashik
Rio Egegik
Rio Kanektok
Rio Goodnews
Rio Togiak
Rio Nushagak
Rio Kvichak
Rio Naknek
Rio Ugashik
Rio Egegik
Rio Kanektok
Rio Goodnews
Rio Togiak


Time when Noon at Greenwich
3.40 A.M.
4.00 A.M.
4.20 A.M.
4.40 A.M.
5.00 A.M.
5.20 A.M.
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
REGINA
Lake Manitoba
C.Flattery
Str. of Juan de Fuca
Mt. Baker
Bellingham
WASHINGTON
Seattle
Tacoma
Spokane
C.Disappointment
Astoria
Portland
OREGON
Salem
C.Blanco
Grants Pass
Eugene
Roseburg
Coos Bay
Crescent City
Mt. Shasta
Redding
Eureka
Red Bluff
Marysville
Sacramento
San Francisco
Oakland
Stockton
San Jose
Santa Cruz
Fresno
Visalia
Tulare L.
Bakersfield
Pt. Conception
Santa Barbara
Los Angeles
San Diego
SANTA BARBARA ISLANDS
Sierra Nevada Range
Coast Range
Cascade Range
Wasatch Mts.
Rocky Mts.
Blue Mts.
Salmon Mts.
Bitter Root Mts.
Big Horn Mts.
Wind R. Mts.
Laramie Mts.
Front Range
Park Range
Sangre de Cristo Mts.
San Juan Mts.
Eagle Mts.
Guadalupe Mts.
Llano Estacado
Pecos R.
Rio Grande
Colorado R.
Gila R.
Snake R.
Columbia R.
Missouri R.
Yellowstone R.
Platte R.
Arkansas R.
Red R.
Brazos R.
Trinity R.
Nueces R.
Wabash R.
Ohio R.
Mississippi R.
Great Salt Lake
Utah L.
Mono L.
Klamath L.
Malheur L.
Harney L.
Christmas or Warners Lakes
Abert L.
Owens L.
Death Valley
Searchlight
Las Vegas
Bullfrog
Goldfield
Tonopah
Belmont
Austin
Eureka
Ely
Virginia City
Carson City
Reno
Winnemucca
Tuscarora
Lovelocks
Wadsworth
Truckee R.
Humboldt R.
Carson R.
Walker L.
Pyramid L.
Honey L.
Mt. Whitney
Death Valley
NEVADA
UTAH
Salt Lake City
Ogden
Provo
Park City
Uinta Mts.
Logan
Preston
Pocatello
Idaho Falls
Bellevue
Shoshone
Blackfoot
Weiser
Caldwell
Boise
Hailey
Salmon
Lewiston
Moscow
Genesee
Colfax
Pullman
Walla Walla
Dayton
Snake R.
Wardner
Wallace
Coeur d'Alene
Spokane
Colville
Kettle R.
Flathead L.
Missoula
Great Falls
Helena
Butte
Anaconda
Deerlodge
Marysville
Belt
Big Belt Mts.
Little Belt Mts.
Bozeman
Livingston
Billings
Mussleshell
Mile City
Dillon
Redlodge
Hardin
Yellowstone R.
Missouri R.
MONTANA
Minot
Devils Lake
Park River
Grand Forks
Pembina
Grafton
NORTH DAKOTA
Dickinson
Mandan
BISMARCK
Valley City
Fargo
Wahpeton
Ellendale
Aberdeen
Watertown
Brookings
SOUTH DAKOTA
Redfield
Huron
PIERRE
Chamberlain
Mitchell
Sioux Falls
Yankton
Hot Springs
Rapid City
Black Hills
Lead
Deadwood
Newcastle
Buffalo
Sheridan
Fremont Peak
Shoshone Range
Yellowstone Nat. Park
Tetonstone L.
Jackson L.
Jackson Hole
Teton Mts.
Green R. Mts.
Wind R. Mts.
Big Horn Mts.
Powder River Range
WYOMING
Lander
Montpelier
South Pass
Rawlins
Green River
Rock Springs
Laramie
Cheyenne
Evanston
Ogden
Park City
Provo
Springville
Nephi
Manti
Mt. Pleasant
Ephraim
Richfield
Glenwood Springs
Leadville
Buenavista
Cripple Creek
Colorado Springs
Pikes Peak
Canon City
Salida
Ouray
Durango
Pueblo
Lajunta
Spanish Peaks
Trinidad
Raton
Blossburg
COLORADO
DENVER
Central City
Golden
Boulder
Longs Peak
Estes Park
Middle Park
North Park
Grand Junction
Gunnison
Uncompahgre Mts.
Sangre de Cristo Mts.
Wasatch Mts.
Grand Canyon
Colorado R.
Green R.
Virgin R.
Little Colorado R.
Williams
Flagstaff
Winslow
Prescott
Jerome
St. Johns
Phoenix
Tempe
Globe
Clifton
Tucson
Tombstone
Nogales
Bisbee
Gila R.
Salt R.
Verde R.
ARIZONA
Santa Fe
Cerrillos
Las Vegas
Springer
Albuquerque
Bernalillo
Socorro
Whitecone
Roswell
Hillsboro
Silver City
Deming
Lascruces
Carlsbad
Estacado
Llano
Canadian R.
Pecos R.
Rio Grande
NEW MEXICO
Abilene
Fort Worth
Waco
Austin
San Antonio
Eagle Pass
Laredo
Corpus Christi
Brazos R.
Colorado R.
Trinity R.
Nueces R.
Rio Grande
TEXAS
Wichita
Dodge Cy.
Hutchinson
Wellington
Arkansas City
Salina
Junction C.
Republican R.
Solomon R.
Smoky Hill R.
Kearney
Hastings
Holdredge
Fairbury
McCook
Grand Island
North Platte
Valentine
Niobrara R.
Norfolk
NEBRASKA
Lawton
Ardmore
Hobart
Guthrie
OKLAHOMA
Gulf of California
Lower California
PACIFIC OCEAN
MEXICO
UNITED STATES
SHOWING
IMPORTANT COMMERCIAL ROUTES
SCALE OF MILES
0 100 200 300 400 500
Railroads
Canals
Standard Time Divisions
Head of Navigation
Longitude
West
125 120 115 110 105 100
45 40 35 30 25
O VLADIVOSTOK
O PEKIN
O TOKYO
O SHANGHAI


5.40 A.M.
6.00 A.M.
6.20 A.M.
6.40 A.M.
7.00 A.M.
7.20 A.M.
from Greenwich
CANADA
QUEBEC
ONTARIO
NEW BRUNSWICK
MAINE
LAKE SUPERIOR
LAKE HURON
LAKE MICHIGAN
LAKE ERIE
L. ONTARIO
MICHIGAN
WISCONSIN
MINNESOTA
IOWA
ILLINOIS
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSOURI
ARKANSAS
LOUISIANA
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENNSYLVANIA
NEW YORK
MARYLAND
DELAWARE
NEW JERSEY
MASSACHUSETTS
VERMONT
NEW HAMPSHIRE
RHODE ISLAND
CONNECTICUT
ATLANTIC OCEAN
GULF OF MEXICO
BAHAMA ISLANDS
Lake Winnipeg
Lake of the Woods
Rainy L.
Lake Nipigon
Port Arthur
ISLE ROYALE
Red L.
Duluth
Marquette
Ironwood
Ashland
Superior
Minneapolis
ST PAUL
Winona
La Crosse
Milwaukee
Racine
Chicago
Green Bay
Oshkosh
Fond du Lac
Sheboygan
Manitowoc
Grand Rapids
Saginaw
Bay City
Detroit
Port Huron
Toronto
Kingston
Ottawa
Montreal
Quebec
Rochester
Buffalo
Albany
Troy
Utica
Syracuse
Boston
Portland
Augusta
Bangor
Mt. Katahdin
Mt. Desert I.
Rockland
Concord
Manchester
Portsmouth
Lowell
Worcester
Providence
Newport
Nantucket I.
Martha's Vineyard
Cape Cod
Monomoy Pt.
Montauk Pt.
New York
Newark
Jersey City
Philadelphia
Trenton
Reading
Scranton
Wilkesbarre
Harrisburg
Pittsburg
Allegheny
Erie
Cleveland
Youngstown
Akron
Canton
Toledo
Sandusky
Columbus
Springfield
Dayton
Cincinnati
Newport
Portsmouth
Zanesville
Wheeling
Parkersburg
Charleston
Huntington
Ashland
Lexington
Frankfort
Louisville
Evansville
New Albany
Jeffersonville
Indianapolis
Terre Haute
Lafayette
Logansport
Fort Wayne
South Bend
Michigan City
Gary
Hammond
Kalamazoo
Battle Creek
Jackson
Lansing
Flint
Bay City
Saginaw
Traverse City
Mackinac
Sault Ste Marie
Houghton
Hancock
Calumet
Ishpeming
Negaunee
Escanaba
Menominee
Marinette
Green Bay
Appleton
Oshkosh
Fond du Lac
Sheboygan
Manitowoc
Two Rivers
Kewaunee
Algoma
Sturgeon Bay
Door Peninsula
Washington I.
Rock I.
Moline
Davenport
Clinton
Dubuque
Waterloo
Cedar Rapids
Iowa City
Muscatine
Burlington
Keokuk
Fort Madison
Des Moines
Council Bluffs
Sioux City
Omaha
Lincoln
Nebraska City
Atchison
Leavenworth
Kansas City
St. Joseph
Hannibal
Quincy
Peoria
Bloomington
Springfield
Jacksonville
Alton
East St. Louis
St. Louis
Cairo
Carbondale
Centralia
Effingham
Mattoon
Decatur
Champaign
Danville
Terre Haute
Vincennes
Evansville
Princeton
Mt. Vernon
Shawneetown
Harrisburg
Metropolis
Paducah
Hickman
Columbus
Fulton
Union City
Dyersburg
Memphis
Helena
Jonesboro
Batesville
Fort Smith
Van Buren
Eureka Springs
Fayetteville
Springfield
West Plains
Joplin
Carthage
Webb City
Nevada
Fort Scott
Parsons
Pittsburg
Girard
Cherryvale
Independence
Coffeyville
Chanute
Iola
Humboldt
Neosho
Carthage
Lamar
Butler
Clinton
Sedalia
Boonville
Jefferson City
Columbia
Hannibal
Kirksville
Trenton
Chillicothe
Brookfield
Macon
Moberly
Mexico
Fulton
Warrenton
St. Charles
Hermann
Washington
Union
Pacific
Rolla
Salem
Doniphan
Poplar Bluff
Cape Girardeau
Sikeston
New Madrid
Kennett
Caruthersville
Blytheville
Osceola
Helena
West Helena
Marianna
Forrest City
Wynne
Jonesboro
Paragould
Pocahontas
Corning
Hoxie
Walnut Ridge
Newport
Searcy
Batesville
Mountain Home
Harrison
Berryville
Eureka Springs
Rogers
Bentonville
Fayetteville
Siloam Springs
Van Buren
Fort Smith
Russellville
Clarksville
Ozark
Paris
Ozark
Dardanelle
Morrilton
Conway
Little Rock
North Little Rock
Pine Bluff
Arkadelphia
Hot Springs
Malvern
Benton
Camden
El Dorado
Magnolia
Texarkana
Hope
Prescott
Nashville
Lewisville
Ashdown
De Queen
Mena
Waldron
Booneville
Greenwood
Fort Smith
Alma
Van Buren
Eureka Springs
Fayetteville
Springdale
Rogers
Bentonville
Siloam Springs
Gentry
Decatur
Huntsville
Scottsboro
Stevenson
Bridgeport
Chattanooga
Cleveland
Dalton
Rome
Gadsden
Anniston
Talladega
Birmingham
Tuscaloosa
Selma
Montgomery
Greenville
Troy
Eufaula
Opelika
Auburn
Tuskegee
Columbus
Phenix City
Eufaula
Albany
Thomasville
Tallahassee
Jaspen
Live Oak
Lake City
Gainesville
Ocala
Palatka
Daytona
St. Augustine
Jacksonville
Fernandina
St. Marys R.
St. Johns R.
Brunswick
Savannah
Macon
Columbus
Americus
Albany
Waycross
Thomasville
Quitman
Valdosta
Moultrie
Tifton
Cordele
Fitzgerald
Dublin
Milledgeville
Sandersville
Augusta
Aiken
Barnwell
Orangeburg
Georgetown
Charleston
Summerville
Beaufort
Port Royal
Hilton Head
Savannah
Statesboro
Waynesboro
Millen
Swainsboro
Vidalia
Lyons
Hazlehurst
Jesup
Waycross
Folkston
Fernandina
Jacksonville
St. Augustine
Palatka
Daytona
Orlando
Kissimmee
Tampa
Bartow
Lakeland
Winter Haven
Sanford
Ocala
Gainesville
Lake City
Live Oak
Madison
Monticello
Quincy
Tallahassee
Jaspen
Marianna
Chipley
Bonifay
Chipley
Panama City
Apalachicola
Carrabelle
St. George I.
St. George Sd.
Apalachicola Bay
Pensacola
Milton
Crestview
Fort Walton
Destin
Niceville
Valparaiso
Mary Esther
Gulf Breeze
Pensacola
Mobile
Bay Minette
Foley
Gulf Shores
Orange Beach
Fairhope
Daphne
Spanish Fort
Robertsdale
Loxley
Elberta
Summerdale
Foley
Bay Minette
Atmore
Brewton
Flomaton
Jay
Milton
Crestview
Fort Walton
Destin
Niceville
Valparaiso
Mary Esther
Gulf Breeze
Pensacola
Milton
Bonifay
Chipley
Panama City
Apalachicola
Carrabelle
St. George I.
St. George Sd.
Apalachicola Bay

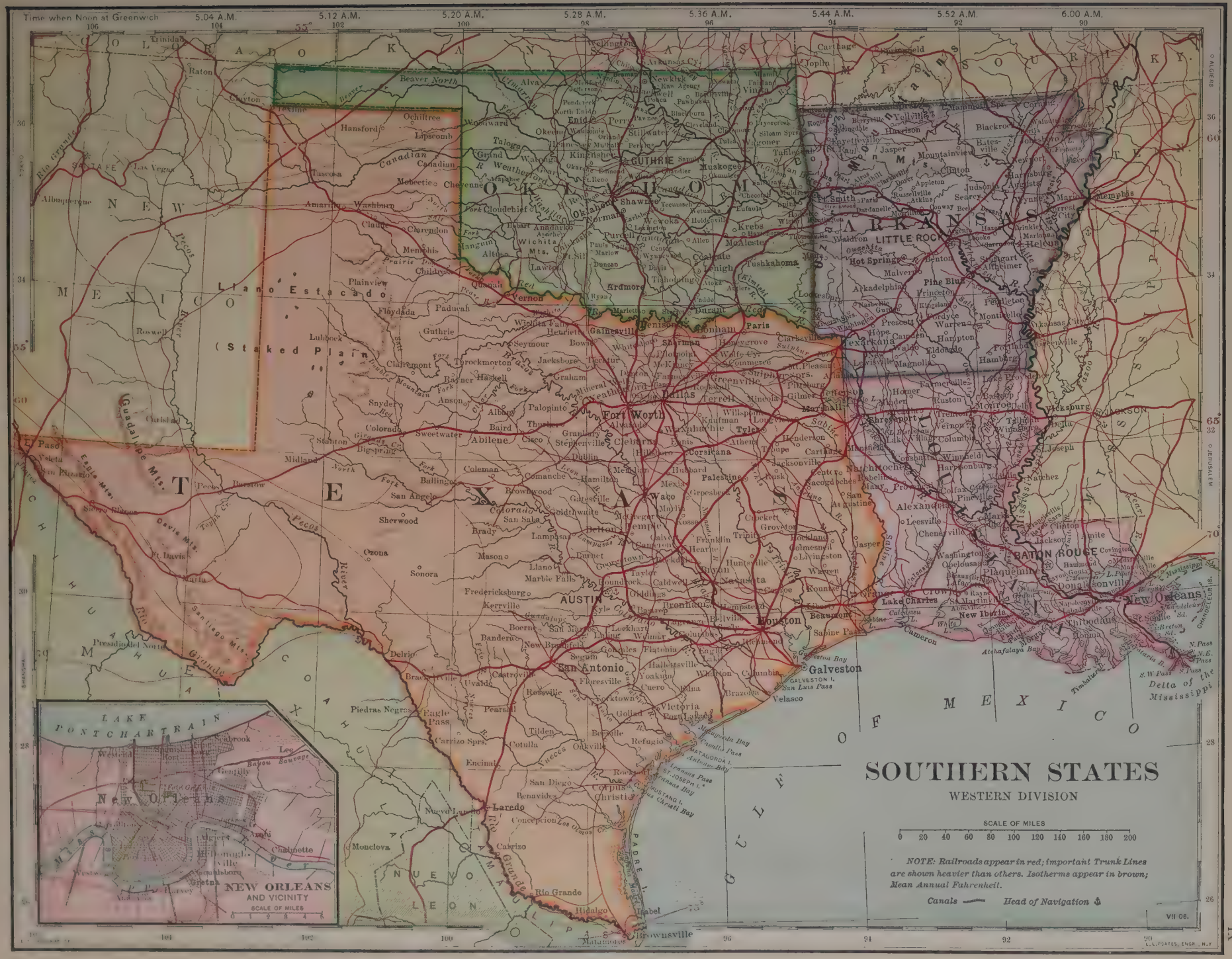

Time when Noon at Greenwich
6.32 A.M.
6.40 A.M.
6.48 A.M.
6.56 A.M.
7.04 A.M.
LONG ISLAND
SCALE OF MILES
NEW YORK CITY AND VICINITY
SCALE OF MILES
WESTERN PART OF VIRGINIA
KENTUCKY
TENNESSEE
LAKE ONTARIO
Surface 247 feet above Sea Level
LAKE ERIE
Surface 573 feet above Sea Level
ATLANTIC OCEAN
NEW YORK
PENNSYLVANIA
OHIO
WEST VIRGINIA
VIRGINIA
MARYLAND
DELAWARE
NORTH CAROLINA
TENN.
KY.
WASHINGTON
RICHMOND
ALBANY
TRENTON
Philadelphia
Baltimore
ANNAPOLIS
DOVER
Atlantic City
Cape May
Ocean Cy.
Newport News
Portsmouth
Norfolk
Virginia Beach
Dismal Swamp
Buffalo
Rochester
Syracuse
Scranton
Wilkes-Barre
Williamsport
Pittsburg
Johnstown
Harrisburg
Reading
Lancaster
Wilmington
Trenton
Atlantic City
Cleveland
Erie
Toronto
Hamilton
Ottawa
Montreal
Kingston
Charleston
Wheeling
Cumberland
Hagerstown
Frederick
Richmond
Petersburg
Lynchburg
Roanoke
Norfolk
Longitude West 78 from Greenwich 76
MIDDLE STATES
SCALE OF MILES
0 10 20 30 40 50 60 70 80 90 100
NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.
Canals
Head of Navigation

7.04 A.M. Time when Noon at Greenwich
7.08 A.M.
7.12 A.M.
7.16 A.M.
7.20 A.M.
7.24 A.M.
7.28 A.M.
7.32 A.M.
NEW ENGLAND STATES
SCALE OF MILES
0 10 20 30 40 50 60 70 80 90 100
NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.
Canals
Head of Navigation
BOSTON AND VICINITY
SCALE OF MILES
0 1 2 3 4 5 6 7 8 9 10
DOMINION OF CANADA
QUEBEC
Montreal
Three Rivers
Sherbrooke
Megantic
St. Johns
Joliette
Drummondville
Arthabaska
Richmond
Cookshire
Lake Memphremagog
St. Lawrence R.
Richelieu R.
St. Francis R.
St. Peter R.
Chaudiere R.
Connecticut R.
Aroostook R.
St. John R.
Madawaska
Edmundston
Grand Isle
Frenchville
St. Francis
Ft. Kent
Eagle Lake
Van Buren
Upper L.
Lakes
Limestone
Caribou
Fish River L.
Portage L.
Ft. Fairfield
Haystack Mt.
Presque Isle
Perth
Ashland
Easton
Squapenagat L.
Mars Hill
Bridgewater
Long L.
Heron L.
Allegash L.
Chamberlain L.
Allegash R.
Fish River
Wallagoutique
Monticello
Houlton
Woodstock
Chesuncook L.
Patten
Lincoln
Hodgdon
FREDERICTON
Mt. Katahdin
Moosehead Lake
Mt. Kineo
Pemadumcook L.
Millinocket L.
Grand L.
Katahdin Iron Works
Greenville
Monson
Brownville
Milo
Foxcroft
Guilford
Dover
Dunforth
Vanceboro
Mattawamkeag
Lincoln
Princeton
Calais
Passadumkeag
Robinston
Mt. Bigelow
Carrabassett
Bingham
Dexter
Corinna
Solon
Newport
Oldtown
Orono
Bangor
Brewer
Orrington
Bucksport
Hampden
Winterport
Belfast
Lincolnville
Camden
Rockland
Thomaston
Warren
Waldoboro
Pittston
Wiscasset
Bath
Brunswick
Bowdoin
Topsham
Harpswell
Bay Har.
Portland
Cape Elizabeth
Scarboro
Old Orchard
Saco
Biddeford
Kennebunkport
Wells
Sanford
Kennebunk
N. Berwick
Berwick
Salmon Falls
South Berwick
Eliot
York Beach
York
Kittery
Portsmouth
Piscataqua R.
ISLES OF SHOALS
Hampton
Seabrook
Exeter
Epping
Newburyport
Ipswich
Cape Ann
Gloucester
Rockport
Lawrence
Andover
Lowell
Salem
Lynn
Somerville
Cambridge
BOSTON
Quincy
Massachusetts Bay
Cape Cod Bay
Provincetown
Gurnet Pt.
Plymouth B.
Plymouth
Brockton
Taunton
Middleboro
Sandwich
Harwich
Chatham
Orleans
Cape Cod
Fall River
New Bedford
Fairhaven
Newport
Nantucket
Nantucket Sound
Muskeget Channel
Monomoy Pt.
Marthas Vineyard
Block I.
Gardiners I.
Montauk Pt.
Long Island Sound
Stamford
Greenwich
Norwalk
Bridgeport
Fairfield
Stratford
Milford
New Haven
Derby
Ansonia
Danbury
Waterbury
Meriden
Wallingford
Middletown
Norwich
New London
Groton
Stonington
Saybrook
Old Saybrook
Deep River
Essex
Chester
Haddam
Middletown
Portland
Wethersfield
Hartford
Windsor
Windsor Locks
Suffield
Enfield
Thompsonville
Stafford
Thompson
Putnam
Rockville
Killingly
Willimantic
Manchester
Rockville
Tolland
Vernon
Ellington
Somers
Stafford
Springs
Broad Brook
Warehouse Point
East Windsor Hill
Windsor
Poquonock
Simsbury
Granby
Suffield
Enfield
Thompsonville
Stafford
Thompson
Putnam
Rockville
Killingly
Willimantic
Manchester
Rockville
Tolland
Vernon
Ellington
Somers
Stafford Springs
Broad Brook
Warehouse Point
East Windsor Hill
Windsor
Poquonock
Simsbury
Granby
Winsted
Torrington
Litchfield
Bristol
Plainville
Farmington
New Britain
Berlin
Meriden
Waterbury
Naugatuck
Derby
Ansonia
Danbury
Bethel
Redding
Ridgefield
Norwalk
Stamford
Greenwich
Port Chester
Rye
New York
Longitude West from Greenwich
73
72
71
70
69
68
67
35°
36
37
38
39
40
41
42
43
44
45
46
47
PORTLAND
VENICE
MARSEILLES
VLADIVOSTOK
ALBANY
NEW YORK
HARTFORD
PROVIDENCE
NEW HAVEN
CONCORD
AUGUSTA
MONTPELIER
WHITE MOUNTAINS
GREEN MOUNTAINS
ADIRONDACK MTS
CONNECTICUT VALLEY
MASSACHUSETTS
RHODE ISLAND
NEW HAMPSHIRE
VERMONT
MAINE
ATLANTIC OCEAN
Lake Champlain
Lake George
Hudson R.
Housatonic R.
Naugatuck R.
Connecticut R.
Androscoggin R.
Kennebec R.
Penobscot R.
Passamaquoddy B.
Machias B.
Frenchman B.
Mt. Desert I.
Mt. Washington
Mt. Adams
Mt. Jefferson
Mt. Monadnock
Mt. Kearsarge
Mt. Sunapee
Mt. Tom
Mt. Holyoke
Mt. Greylock
Mt. Everett
Mt. Riga
Mt. Tekoa
Mt. Toby
Mt. Sugarloaf
Mt. Abraham
Mt. Blue
Mt. Desert
Cadillac Mt.
Green Mt.
White Mts.
Adirondack Mts
Taconic Mts
Berkshire Hills
Hoosac Mts
Camels Hump
Mansfield
Killington Pk.
Pittsfield
Lenox
Stockbridge
Lee
Great Barrington
Sheffield
Canaan
Salisbury
Kent
Cornwall
Litchfield
Torrington
Winsted
Norfolk
Colebrook
Umbagog L.
Richardson L.
Rangeley L.
Mooselookmeguntic L.
Cupsuptic L.
Kennebago L.
Dead R.
Androscoggin R.
Rumford Falls
Livermore Falls
Lewiston
Auburn
Gardiner
Augusta
Hallowell
Winthrop
Waterville
Oakland
Fairfield
Skowhegan
Norridgewock
Madison
Anson
Strong
Phillips
Farmington
Wilton
Jay
Canton
Peru
Dixfield
Mexico
Rumford
Bethel
Gilead
Newry
Upton
Andover
Grafton
Rumford Falls
Livermore
Turner
Leeds
Monmouth
Winthrop
Hallowell
Chelsea
Pittston
Gardiner
Richmond
Bowdoinham
Topsham
Brunswick
Bath
Phippsburg
Georgetown
Arrowsic
Boothbay
Boothbay Har.
Damariscotta
Newcastle
Wiscasset
Alna
Whitefield
Jefferson
Waldoboro
Thomaston
Rockland
Camden
Belfast
Searsport
Blue Hill
Ellsworth
Orland
Bucksport
Winterport
Hampden
Orrington
Brewer
Bangor
Old Town
Milford
Veazie
Corinth
Dexter
Sebec L.
Sebec
Foxcroft
Dover
Guilford
Monson
Brownville
Milo
Greenville
Moosehead Lake
Kineo
Mt. Kineo
Pemadumcook L.
Millinocket L.
Grand L.
Katahdin Iron Works
Mt. Katahdin
Chesuncook L.
Patten
Lincoln
Hodgdon
Houlton
Woodstock
Mars Hill
Bridgewater
Ashland
Easton
Presque Isle
Perth
Fort Fairfield
Caribou
Limestone
Upper L.
Lakes
Fish River L.
Portage L.
Haystack Mt.
Long L.
Heron L.
Allegash L.
Chamberlain L.
Allegash R.
Fish River
Wallagoutique
Monticello
Squapenagat L.
Mars Hill
Bridgewater
Ashland
Easton
Presque Isle
Perth
Fort Fairfield
Caribou
Limestone
Upper L.
Lakes
Fish River L.
Portage L.
Haystack Mt.
Long L.
Heron L.
Allegash L.
Chamberlain L.
Allegash R.
Fish River
Wallagoutique
Monticello
Houlton
Woodstock
Chesuncook L.
Patten
Lincoln
Hodgdon
FREDERICTON
Mt. Katahdin
Moosehead Lake
Mt. Kineo
Pemadumcook L.
Millinocket L.
Grand L.
Katahdin Iron Works
Greenville
Monson
Brownville
Milo
Foxcroft
Guilford
Dover
Dunforth
Vanceboro
Mattawamkeag
Lincoln
Princeton
Calais
Passadumkeag
Robinston
Mt. Bigelow
Carrabassett
Bingham
Dexter
Corinna
Solon
Newport
Oldtown
Orono
Bangor
Brewer
Orrington
Bucksport
Hampden
Winterport
Belfast
Lincolnville
Camden
Rockland
Thomaston
Warren
Waldoboro
Pittston
Wiscasset
Bath
Brunswick
Bowdoin
Topsham
Harpswell
Bay Har.
Portland
Cape Elizabeth
Scarboro
Old Orchard
Saco
Biddeford
Kennebunkport
Wells
Sanford
Kennebunk
N. Berwick
Berwick
Salmon Falls
South Berwick
Eliot
York Beach
York
Kittery
Portsmouth
Piscataqua R.
ISLES OF SHOALS
Hampton
Seabrook
Exeter
Epping
Newburyport
Ipswich
Cape Ann
Gloucester
Rockport
Lawrence
Andover
Lowell
Salem
Lynn
Somerville
Cambridge
BOSTON
Quincy
Massachusetts Bay
Cape Cod Bay
Provincetown
Gurnet Pt.
Plymouth B.
Plymouth
Brockton
Taunton
Middleboro
Sandwich
Harwich
Chatham
Orleans
Cape Cod
Fall River
New Bedford
Fairhaven
Newport
Nantucket
Nantucket Sound
Muskeget Channel
Monomoy Pt.
Marthas Vineyard
Block I.
Gardiners I.
Montauk Pt.
Long Island Sound
Stamford
Greenwich
Norwalk
Bridgeport
Fairfield
Stratford
Milford
New Haven
Derby
Ansonia
Danbury
Bethel
Redding
Ridgefield
Norwalk
Stamford
Greenwich
Port Chester
Rye
New York
Longitude West from Greenwich
73
72
71
70
69
68
67
35°
36
37
38
39
40
41
42
43
44
45
46
47
PORTLAND
VENICE
MARSEILLES
VLADIVOSTOK
ALBANY
NEW YORK
HARTFORD
PROVIDENCE
NEW HAVEN
CONCORD
AUGUSTA
MONTPELIER
WHITE MOUNTAINS
GREEN MOUNTAINS
ADIRONDACK MTS
CONNECTICUT VALLEY
MASSACHUSETTS
RHODE ISLAND
NEW HAMPSHIRE
VERMONT
MAINE
ATLANTIC OCEAN
Lake Champlain
Lake George
Hudson R.
Housatonic R.
Naugatuck R.
Connecticut R.
Androscoggin R.
Kennebec R.
Penobscot R.
Passamaquoddy B.
Machias B.
Frenchman B.
Mt. Desert I.
Mt. Washington
Mt. Adams
Mt. Jefferson
Mt. Monadnock
Mt. Kearsarge
Mt. Sunapee
Mt. Tom
Mt. Holyoke
Mt. Greylock
Mt. Everett
Mt. Riga
Mt. Tekoa
Mt. Toby
Mt. Sugarloaf
Mt. Abraham
Mt. Blue
Mt. Desert
Cadillac Mt.
Green Mt.
White Mts.
Adirondack Mts
Taconic Mts
Berkshire Hills
Hoosac Mts
Camels Hump
Mansfield
Killington Pk.
Pittsfield
Lenox
Stockbridge
Lee
Great Barrington
Sheffield
Canaan
Salisbury
Kent
Cornwall
Litchfield
Torrington
Winsted
Norfolk


CENTRAL STATES
WESTERN DIVISION
SCALE OF MILES
0 20 40 60 80 100 120 140 160 180
Time when Noon at Greenwich
5.12 A.M. 102
5.20 A.M. 100
5.28 A.M. 98
5.36 A.M. 96
5.44 A.M. 94
5.52 A.M. 92
6.00 A.M. 90
6.08 A.M. 88
DOMINION OF CANADA
SASKATCHEWAN
MANITOBA
ONTARIO
L. Manitoba
L. Winnipeg
WINNIPEG
Portage la Prairie
Brandon
Assiniboine
Rat Portage
Lake of the Woods
Port Arthur
Ft. William
HUNTERS I.
ISLE ROYALE
L. SUPERIOR
Surface, 602 ft. above Sea Level
APOSTLES IS.
Grand Marais
Beaverbay
Duluth
Two Harbors
Grand Rapids
Red L.
Red Lake Falls
Crookston
Grand Forks
Northwood
Mayville
Caledonia
Portland
Hillsboro
Grandin
Sanborn
Wheatland
Valley City
Fargo
Jamestown
Tower City
Napoleon
Edgeley
Lamoure
Lisbon
Monango
Ashley
Oakes
Wahpeton
Harlem
Minot
Williston
Buford
Churchs Ferry
Rugby
Towner
Devils Lake
Minnewaukon
Langdon
Milton
Grafton
Park River
Pembina
Emerson
St. Vincent
Hallock
St. Thomas
Drayton
Bottineau
Rolla
St. John
Willow Cy.
Lando
Plateau du Coteau du Missouri
NORTH DAKOTA
Washburn
Stanton
Mandan
BISMARCK
Dickinson
New Salem
Sims
Steele
Dawson
Sykeston
Cooperstown
New Rockford
Carrington
Sheyenne
Missouri
Knife
Heart
Cannon Ball
South Fork
Pole Hill
Short Medicine
Eureka
Leola
Mound Cy.
Ellendale
Aberdeen
Columbia
Groton
Britton
Hecla
Bangor
Ipswich
Webster
Millbank
Faulkton
Gettysburg
Redfield
Clark
Watertown
Onida
SOUTH DAKOTA
PIERRE
Ft. Pierre
Ft. Meade
Fort Pierre
Miller
Hitchcock
Huron
Dehnet
Woonsocket
Madison
Chamberlain
Oacoma
Kimball
Mitchell
Bridgewater
Sioux Falls
Parker
Menno
Armour
Scotland
Wheeler
Tyndall
Yankton
Vermillion
Elk Point
Sioux City
Idaho Grove
Ft. Dodge
Webster City
Iowa Falls
Eldora
Cedar Falls
Waterloo
Independence
Manchester
Dubuque
Monticello
Maquoketa
Prairie du Chien
MADISON
Rochester
Winona
La Crosse
Austin
Winnebago Cy.
Blue Earth
Albert Lea
Spring Valley
Preston
Caledonia
Rushford
Fairmont
Wells
Kasson
Mankato
New Ulm
Waseca
Owatonna
Faribault
Northfield
Hastings
Redwing
Lake City
Eau Claire
L. Pepin
Stillwater
Minneapolis
ST. PAUL
Anoka
Princeton
Elk River
Rush City
Sauk Rapids
St. Cloud
Sauk Centre
Wadena
Little Falls
Brainerd
Motley
Staples
Pelican L.
Detroit City
Walker
Leech L.
Itasca L.
Bemidji
Cass L.
Winnipeg R.
Red R.
Mississippi R.
Crow Wing R.
Pine R.
Rainy R.
Vermilion L.
Nanakan R.
Loon L.
Saganaga
Dotson
Gunflint
Grand Portage
Pigeon R.
Boundary Waters
Height of Land
Wild Rice R.
Otter Tail R.
Otter Tail L.
Mille Lacs
Big Stone L.
Traverse
Lake Traverse
Minnesota R.
Yellow Medicine R.
Cottonwood R.
Watonwan R.
Blue Earth R.
Le Sueur R.
Zumbro R.
Root R.
Whitewater R.
Wisconsin R.
Chippewa R.
Black R.
Flambeau R.
Wisconsin
MICHIGAN
Iowa
Illinois
Missouri
Kansas
Nebraska
Colorado
Oklahoma
Texas
Arkansas
Louisiana
Mississippi
Tennessee
Kentucky
Indiana
Ohio
Michigan
Wisconsin
Sand Hills
NEBRASKA
Alliance
Hemingford
Gering
Harrisburg
Kimball
Chappell
Sidney
Oshkosh
Lodgepole
Crawford
Chadron
Rushville
Valentine
Springview
Niobrara
Hartington
Ainsworth
Bassett
Atkinson
Neligh
Oakdale
Norfolk
Pierce
Wayne
Wakefield
Dakota City
Ponca
Scribner
Fremont
Blair
Tekamah
Decatur
Onawa
Sergeant Bluff
Sioux City
Le Mars
Orange City
Hawarden
Cherokee
Sheldon
Spencer
Estherville
Emmetsburg
Algona
Mason City
Charles City
Hampton
Webster
Eagle Grove
Clarion
Belmond
Garner
Northwood
Crescent
Decorah
Waukon
Lansing
Calmar
Oelwein
Postville
Elkader
Strawberry Point
Manchester
Independence
Anamosa
Monticello
Maquoketa
Bellevue
Boone
Ames
Nevada
Marshalltown
Tama
Toledo
Grinnell
Newton
Colfax
Monroe
Prairie City
Iowa City
Marengo
Solon
Riverside
Wellman
Kalona
Washington
Fairfield
Mt. Pleasant
Lockridge
Columbus Jct.
Wapello
Muscatine
Davenport
Rock Island
Moline
Clinton
Cedar Rapids
Vinton
Shellsburg
Belle Plaine
Traer
Gladbrook
Reinbeck
Grundy Cy.
Hampton
Aplington
Parkersburg
New Hartford
Dumont
Hubbard
Iowa Falls
Alden
Ackley
Eldora
Steamboat Rock
Ellsworth
Williams
Jewell
Stanhope
Boone
Madrid
Perry
Woodward
Dallas Cy.
Adel
Redfield
Minburn
Dallas Center
Waukee
Des Moines
Indianola
Knoxville
Pella
Oskaloosa
Mahaska
Albia
Monroe
Newton
Colfax
Prairie City
Monroe
Mitchellville
Altoona
Runnells
Carlisle
Indianola
Winterset
Atlantic
Audubon
Harlan
Missouri Valley
Logan
Woodbine
Dunlap
Denison
Ida Grove
Odebolt
Arthur
Wall Lake
Sac City
Early
Storm Lake
Newell
Fonda
Pocahontas
Rolfe
Gilmore City
Humboldt
Dakota
Bode
Livermore
Renwick
Clare
Lehigh
Gowrie
Jolley
Farnhamville
Manson
Pomeroy
Lake City
Rockwell City
Lohrville
Wall Lake
Sac City
Early
Storm Lake
Newell
Fonda
Pocahontas
Rolfe
Gilmore City
Humboldt
Dakota
Bode
Livermore
Renwick
Clare
Lehigh
Gowrie
Jolley
Farnhamville
Manson
Pomeroy
Lake City
Rockwell City
Lohrville
Omaha
Council Bluffs
S. Omaha
Florence
Fort Calhoun
Blair
Tekamah
Decatur
Bellevue
Papillion
Gretna
Springfield
Plattsmouth
Weeping Water
Nehawka
Louisville
Ashland
Wahoo
Yutan
Mead
Schuyler
Clarkson
Leigh
Columbus
Genoa
Fullerton
Albion
Cedar Rapids
Loup City
Ord
Arcadia
Scotia
Greeley
Burwell
Ericson
Taylor
Sargent
Broken Bow
Callaway
Arnold
Anselmo
Merna
Mullen
Hyannis
Thedford
Gandy
Dismal R.
Calamus R.
Loup R.
Cedar R.
Middle Loup
North Loup
South Loup
Dismal R.
Niobrara R.
Elkhorn R.
Platte R.
North Platte
Grand Island
Kearney
Gibbon
Shelton
Wood R.
Lexington
Overton
Elwood
Cozad
Gothenburg
Sutherland
Hershey
North Platte
Maxwell
Brady
Stockville
Imperial
Chase
Wauneta
Palisade
Culbertson
Indianola
McCook
Red Willow
Hayes Cy.
Hayes Center
Hamlet
Trenton
Stratton
Benkelman
Haigler
Arapahoe
Holdrege
Minden
Fairfield
Bluehill
Edgar
Fairfield
Blue Hill
Bloomington
Franklin
Riverton
Alma
Oxford
Orleans
Beaver City
Cambridge
Bartley
Indianola
McCook
Red Willow
Hayes Cy.
Hayes Center
Hamlet
Trenton
Stratton
Benkelman
Haigler
Arapahoe
Holdrege
Minden
Fairfield
Bluehill
Edgar
Fairfield
Blue Hill
Bloomington
Franklin
Riverton
Alma
Oxford
Orleans
Beaver City
Cambridge
Bartley
Superior
Phillipsburg
Norton
Oberlin
Atwood
Goodland
Colby
Hoxie
Hill Cy.
Stockton
Logan
Oakley
Wakeeney
Ellis
Hays
Russell
Salina
Solomon
Abilene
Lincoln
Minneapolis
Manhattan
Osborne
Concordia
Mankato
Phillipsburg
Norton
Oberlin
Atwood
Goodland
Colby
Hoxie
Hill Cy.
Stockton
Logan
Oakley
Wakeeney
Ellis
Hays
Russell
Salina
Solomon
Abilene
Lincoln
Minneapolis
Manhattan
Osborne
Concordia
Mankato
Smith Cy.
Gove
Quinter
Wa Keeney
Ellsworth
Lindsborg
McPherson
Moundridge
Lyons
Sterling
Raymond
Inman
Hutchinson
Newton
Halstead
Sedgwick
Colwich
Valley Center
Kingman
Cheney
Wellington
Belle Plaine
Conway Springs
Caldwell
Arkansas City
Winfield
Arkansas City
Medicine Lodge
Coldwater
Ashland
Meade
Liberal
Springfield
Ulysses
Greensburg
Kinsley
Pratt
Cunningham
Kingman
Harper
Anthony
Kiowa
Medicine Lodge
Coldwater
Ashland
Meade
Liberal
Springfield
Ulysses
Greensburg
Kinsley
Pratt
Cunningham
Kingman
Harper
Anthony
Kiowa
Wichita
Derby
Mulvane
Belle Plaine
Conway Springs
Caldwell
Arkansas City
Winfield
Howard
Independence
Coffeyville
Cherryvale
Parsons
Oswego
Chanute
Erie
Galena
Columbus
Pittsburg
Girard
Arcadia
Carthage
Joplin
Springfield
Willow Sprs.
Van Buren
Forsyth
Gainesville
Dunlap
Westplains
Doniphan
Poplar Bluff
Kansas City
Sedalia
Clinton
Versailles
Jefferson Cy.
Eldorado Sprs.
Nevada
Buffalo
Lebanon
Marshfield
Houston
Salem
Ironton
Waynesville
Rolla
Steelville
Bismarck
Pilot Knob
Iron Mt.
Farmington
Fredericktown
Jackson
Cape Girardeau
Charleston
Dexter
Piedmont
Doniphan
Poplar Bluff
Kansas City
Sedalia
Clinton
Versailles
Jefferson Cy.
Eldorado Sprs.
Nevada
Buffalo
Lebanon
Marshfield
Houston
Salem
Ironton
Waynesville
Rolla
Steelville
Bismarck
Pilot Knob
Iron Mt.
Farmington
Fredericktown
Jackson
Cape Girardeau
Charleston
Dexter
Piedmont
Moberly
Mexico
Fulton
Columbia
Centralia
Sturgeon
Hallsville
Boonville
Glasgow
Fayette
Huntsville
Keytesville
Brunswick
Carrollton
Chillicothe
Trenton
Milan
Princeton
Memphis
Kahoka
Canton
Monticello
Alexandria
Lancaster
Edina
Kirksville
Quincy
Hannibal
Louisiana
Pittsfield
Palmyra
Macon
Shelbina
Paris
Monroe City
Troy
Montgomery
Warrenton
St. Charles
St. Louis
Florissant
Kirkwood
Webster Gr.
Valley Park
Eureka
Pacific
Union
Washington
Hermann
Owensville
Rolla
Steelville
Bismarck
Pilot Knob
Iron Mt.
Farmington
Fredericktown
Jackson
Cape Girardeau
Charleston
Dexter
Piedmont
Durlington
Peoria
Rock Island
Moline
Galesburg
Monmouth
Kewanee
Princeton
Bureau
Henry
Hennepin
Lacon
Chillicothe
Peoria
Pekin
Canton
Lewistown
Havana
Beardstown
Virginia
Jacksonville
Springfield
Pleasant Plains
Auburn
Carlinville
Litchfield
Hillsboro
Vandalia
Greenville
Mt. Carmel
Olney
Robinson
Lawrenceville
Vincennes
Terre Haute
Paris
Charleston
Mattoon
Effingham
Salem
Centralia
Carbondale
Cairo
Mound City
Metropolis
Golconda
Shawneetown
Harrisburg
Marion
Carmi
Mt. Vernon
Fairfield
Wayne City
Albion
Grayville
Princeton
Vincennes
Washington
Jasper
Huntingburg
Evansville
Boonville
Rockport
Tell City
Cannelton
Troy
Owensboro
Henderson
Madisonville
Hopkinsville
Clarksville
Dover
Nashville
Gallatin
Hartsville
Lebanon
Carthage
Springfield
Willow Sprs.
Van Buren
Forsyth
Gainesville
Dunlap
Westplains
Doniphan
Poplar Bluff
Kansas City
Sedalia
Clinton
Versailles
Jefferson Cy.
Eldorado Sprs.
Nevada
Buffalo
Lebanon
Marshfield
Houston
Salem
Ironton
Waynesville
Rolla
Steelville
Bismarck
Pilot Knob
Iron Mt.
Farmington
Fredericktown
Jackson
Cape Girardeau
Charleston
Dexter
Piedmont
Moberly
Mexico
Fulton
Columbia
Centralia
Sturgeon
Hallsville
Boonville
Glasgow
Fayette
Huntsville
Keytesville
Brunswick
Carrollton
Chillicothe
Trenton
Milan
Princeton
Memphis
Kahoka
Canton
Monticello
Alexandria
Lancaster
Edina
Kirksville
Quincy
Hannibal
Louisiana
Pittsfield
Palmyra
Macon
Shelbina
Paris
Monroe City
Troy
Montgomery
Warrenton
St. Charles
St. Louis
Florissant
Kirkwood
Webster Gr.
Valley Park
Eureka
Pacific
Union
Washington
Hermann
Owensville
Rolla
Steelville
Bismarck
Pilot Knob
Iron Mt.
Farmington
Fredericktown
Jackson
Cape Girardeau
Charleston
Dexter
Piedmont
Durlington
Peoria
Rock Island
Moline
Galesburg
Monmouth
Kewanee
Princeton
Bureau
Henry
Hennepin
Lacon
Chillicothe
Peoria
Pekin
Canton
Lewistown
Havana
Beardstown
Virginia
Jacksonville
Springfield
Pleasant Plains
Auburn
Carlinville
Litchfield
Hillsboro
Vandalia
Greenville
Mt. Carmel
Olney
Robinson
Lawrenceville
Vincennes
Terre Haute
Paris
Charleston
Mattoon
Effingham
Salem
Centralia
Carbondale
Cairo
Mound City
Metropolis
Golconda
Shawneetown
Harrisburg
Marion
Carmi
Mt. Vernon
Fairfield
Wayne City
Albion
Grayville
Princeton
Vincennes
Washington
Jasper
Huntingburg
Evansville
Boonville
Rockport
Tell City
Cannelton
Troy
Owensboro
Henderson
Madisonville
Hopkinsville
Clarksville
Dover
Nashville
Gallatin
Hartsville
Lebanon
TEXAS
OKLAHOMA
ARKANSAS
Longitude West from Greenwich
102 100 98 96 94 92 90
50 48 46 44 42 40 38 36

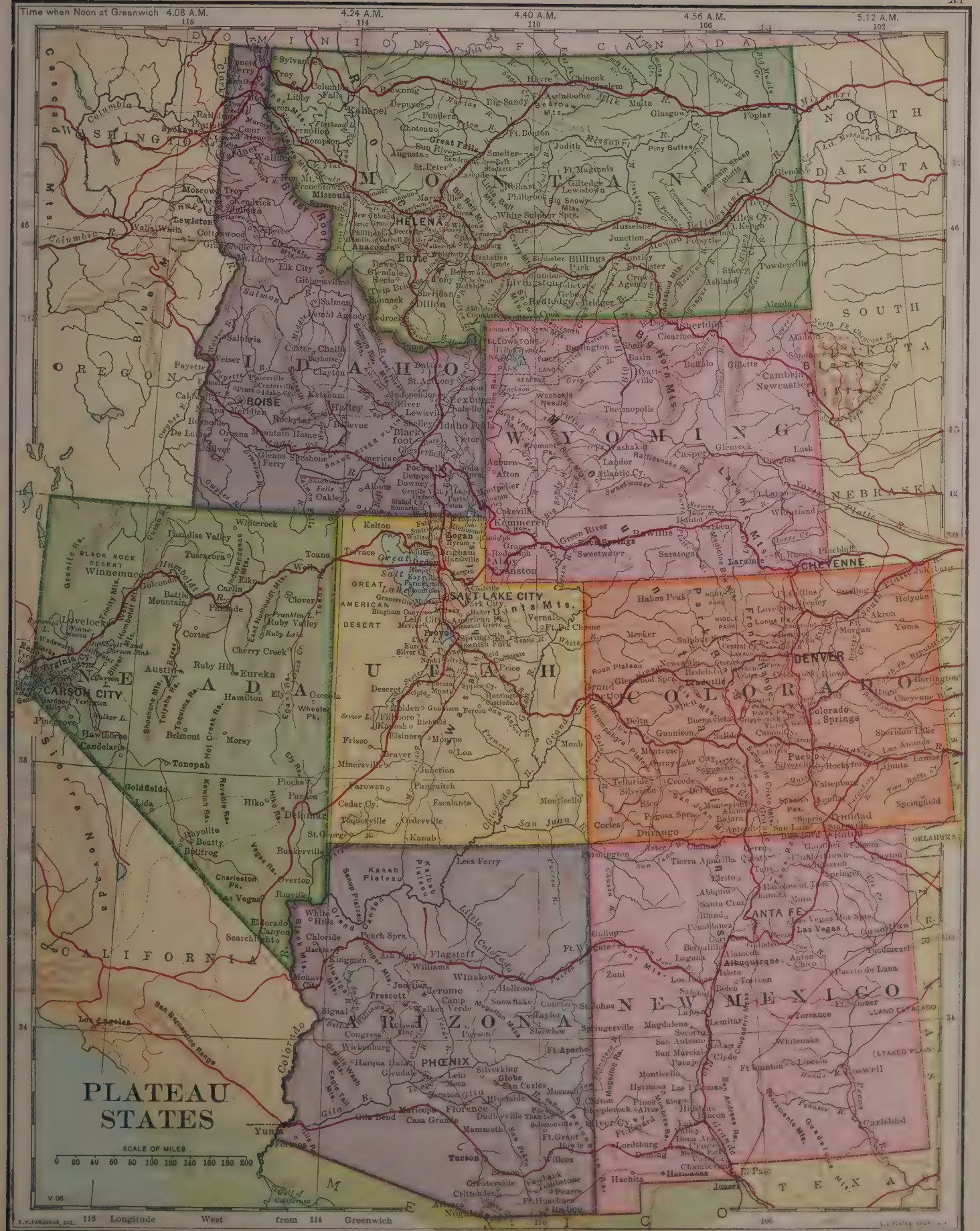
Time when Noon at Greenwich 5.52 A.M.
6.00 A.M.
6.08 A.M.
6.16 A.M.
6.24 A.M.
6.32 A.M.
6.40 A.M.
CHICAGO AND VICINITY
SCALE OF MILES
CENTRAL STATES
EASTERN DIVISION
SCALE OF MILES
0 20 40 60 80 100 120
Longitude 90 West from Greenwich
Surface, 603 feet above Sea Level
Surface, 581 feet above Sea Level
Surface, 383 feet above Sea Level
Surface, 573 feet above Sea Level
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ERIE
LAKE ONTARIO
ISLE ROYALE
MICHIPICOTEN I.
MANITOU I.
CARIBOU I.
APOSTLES IS.
STOCKTON I.
MADELINE I.
WASHINGTON I.
N. MANITOU I.
S. MANITOU I.
GRAND I.
BEAVER
GARDEN
ROB
DRUMMOND
COCKBURN
MANITOULIN
Duluth
Superior
Ashland
Bayfield
Washburn
Houghton
Hancock
Calumet
Keweenaw Pt.
Ontonagon
Baraga
L'Anse
Marquette
Negaunee
Ishpeming
Republic
Michigamme
Champion
Iron River
Iron Mountain
Menominee
Escanaba
Gladstone
Manistique
Mackinac
St. Ignace
Pt. Detour
Harbor Springs
Petoskey
Cheboygan
Alpena
North Pt.
Thunder Bay
Sault Ste. Marie
Newberry
Munising
Grand Marais
Grand Rapids
Hancock
Houghton
Calumet
Red Jacket
L'Anse
Baraga
Ontonagon
Negaunee
Ishpeming
Republic
Champion
Michigamme
Iron River
Iron Mountain
Menominee
Escanaba
Gladstone
Manistique
Mackinac
St. Ignace
Pt. Detour
Harbor Springs
Petoskey
Cheboygan
Alpena
North Pt.
Thunder Bay
Sault Ste. Marie
Newberry
Munising
Grand Marais
Grand Rapids
Duluth
Superior
Ashland
Bayfield
Washburn
Hurley
Ironwood
Wakefield
Bessemer
Crystal Falls
Florence
Wausau
Merrill
Tomahawk
Rhinelander
Antigo
Pesh tigo
Oconto
Marinette
Green Bay
Kewaunee
Depere
Appleton
Neenah
Menasha
Oshkosh
Fond du Lac
Sheboygan
Manitowoc
Two Rivers
Kaukauna
New London
Ft. Howard
Shawano
Waupaca
Wild Rose
Berlin
Ripon
Plymouth
Chilton
Winnebago
Princeton
Montello
Portage
Wisconsin Dells
Reedsburg
Baraboo
Columbus
Beaver Dam
Watertown
Oconomowoc
Waukesha
Milwaukee
Racine
Kenosha
Waukegan
South Haven
Grand Haven
Muskegon
Ludington
Manistee
Frankfort
Sturgeon Bay
Traverse City
Kalkaska
Gaylord
Mancelona
Hubbard L.
Grayling
Bellaire
Charlevoix
Petoskey
Harbor Springs
Cheboygan
Alpena
North Pt.
Thunder Bay
Sault Ste. Marie
Newberry
Munising
Grand Marais
Escoda
Au Sable
E. Tawas
Tawas City
Harbor Beach
Caseville
Pt. au Barques
Grindstone City
Saginaw Bay
Bay City
Saginaw
Caro
Vassar
Marlette
Lapeer
Flint
Port Huron
Sarnia
Lansing
Owosso
Ionia
St. Johns
Alma
St. Louis
Mt. Pleasant
Midland
Clare
Big Rapids
Hart
Montague
Whitehall
Muskegon
Grand Rapids
Holland
Allegan
Hastings
Charlotte
Battle Creek
Kalamazoo
Jackson
Ann Arbor
Detroit
Windsor
St. Thomas
London
Toledo
Monroe
Sandusky
Cleveland
Akron
Youngstown
Canton
Mansfield
Columbus
Zanesville
Cincinnati
Dayton
Springfield
Hamilton
Middletown
Richmond
Newport
Covington
Parkersburg
Huntington
Charleston
West Virginia
Chicago
Michigan City
South Bend
Elkhart
Goshen
Plymouth
Rochester
Logansport
Peru
Wabash
Huntington
Fort Wayne
Warsaw
Columbia City
Auburn
Angola
Hillsdale
Coldwater
Sturgis
Adrian
Tecumseh

Time when Noon at Greenwich
6.00 A.M.
6.08 A.M.
6.16 A.M.
6.24 A.M.
6.32 A.M.
6.40 A.M.
6.48 A.M.
6.56 A.M.
VIII
SOUTHERN STATES
EASTERN DIVISION
SCALE OF MILES
0 20 40 60 80 100 120 140 160 180 200
NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.
Canals
Head of Navigation
Longitude West from Greenwich
ATLANTIC OCEAN
GULF OF MEXICO
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
SOUTH CAROLINA
NORTH CAROLINA
VIRGINIA
LOUISIANA
KENTUCKY
MISSOURI
NASHVILLE
MEMPHIS
ATLANTA
MONTGOMERY
COLUMBIA
RALEIGH
Norfolk
Portsmouth
Wilmington
Charleston
Savannah
Jacksonville
St. Augustine
Pensacola
Mobile
New Orleans
Vicksburg
Natchez
Meridian
Chattanooga
Knoxville
Greensboro
Augusta
Columbus
Macon
Albany
Tallahassee
Apalachicola
Tampa
Key West
Lake Okeechobee
Everglades
Florida Keys
Florida Strait
Delta of the Mississippi
Cape Hatteras
C. Lookout
C. Fear
C. Romain
C. St. George
C. San Blas
C. Canaveral
C. Florida
Mt. Pleasant
Port Royal
Georgetown
Southport
Pamlico Sound
Albemarle Sound
Chesapeake Bay
Tampa Bay
Apalachee Bay
Pensacola Bay
Mobile Bay
Delaware Bay
Chesapeake and Delaware Canal
Dismal Swamp Canal
Dismal Swamp
Okefenokee Swamp
Big Cypress Swamp
Ten Thousand Islands
Ponce de Leon Bay
Florida Bay
Biscayne Bay
Indian River Inlet
Lake Okeechobee
Jupiter
Miami
Melbourne
Daytona
New Smyrna
St. Augustine
Fernandina
Brunswick
Savannah
Charleston
Wilmington
Norfolk
Portsmouth
Richmond
Petersburg
Lynchburg
Roanoke
Danville
Bristol
Knoxville
Chattanooga
Nashville
Memphis
Vicksburg
Natchez
Meridian
Montgomery
Atlanta
Columbus
Macon
Augusta
Albany
Tallahassee
Pensacola
Mobile
New Orleans
Baton Rouge
Jackson
Greenville
Charlotte
Raleigh
Greensboro
Winston-Salem
Asheville
Spartanburg
Greenville
Columbia
Florence
Charleston
Savannah
Jacksonville
St. Augustine
Daytona
New Smyrna
Melbourne
Miami
Key West
Tampa
St. Petersburg
Fort Myers
Naples
Everglades
Florida Keys
Florida Strait
Lake Okeechobee
Kissimmee
Orlando
Ocala
Gainesville
Lake City
Tallahassee
Apalachicola
Pensacola
Mobile
New Orleans
Baton Rouge
Vicksburg
Natchez
Meridian
Jackson
Montgomery
Atlanta
Chattanooga
Knoxville
Nashville
Memphis
Louisville
Cincinnati
Lexington
Frankfort
Evansville
Indianapolis
St. Louis
Kansas City
Omaha
Chicago
Detroit
Cleveland
Pittsburgh
Buffalo
Rochester
Syracuse
Albany
New York
Philadelphia
Baltimore
Washington
Richmond
Norfolk
Portsmouth
Wilmington


Time when Noon at Greenwich
5.04 A.M.
5.12 A.M.
5.20 A.M.
5.28 A.M.
5.36 A.M.
5.44 A.M.
5.52 A.M.
6.00 A.M.
SOUTHERN STATES
WESTERN DIVISION
SCALE OF MILES
0 20 40 60 80 100 120 140 160 180 200
NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.
Canals
Head of Navigation
NEW ORLEANS AND VICINITY
SCALE OF MILES
Delta of the Mississippi
VII 08.
L.L. POATES, ENGR., N.Y.

IX

Time when Noon at Greenwich
3.28 A.M.
3.44 A.M.
4.00 A.M.
4.16 A.M.
PACIFIC STATES
SCALE OF MILES
0 25 50 75 100 125 150 175 200
NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.
Canals
Head of Navigation
SAN FRANCISCO AND VICINITY
SCALE OF MILES
CONTINUATION OF THE ALEUTIAN ISLANDS
ALASKA
SCALE OF MILES
Longitude West from Greenwich
L.L.POATES, ENGR., N.Y.


Time when Noon at Greenwich 4.08 A.M. 4.24 A.M. 4.40 A.M. 4.56 A.M. 5.12 A.M.
DOMINION OF CANADA
WASHINGTON
OREGON
IDAHO
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
NEBRASKA
NEVADA
UTAH
COLORADO
ARIZONA
NEW MEXICO
CALIFORNIA
MEXICO
HELENA
BOISE
SALT LAKE CITY
DENVER
CHEYENNE
CARSON CITY
PHŒNIX
SANTA FE
Uinta Mts.
Big Horn Mts.
Wind River Mts.
Laramie Mts.
Medicine Bow Mts.
Park Range
Sangre de Cristo Mts.
Sierra Nevada
Rocky Mts.
Black Hills
Colorado R.
Columbia R.
Missouri R.
Snake R.
Green R.
Platte R.
Arkansas R.
Rio Grande
Pecos R.
Gila R.
Great Salt Lake
GREAT AMERICAN DESERT
BLACK ROCK DESERT
Los Angeles
San Bernardino Range
Gulf of California
PLATEAU STATES
SCALE OF MILES
0 20 40 60 80 100 120 140 160 180 200
118 Longitude West from 114 Greenwich 110 106

MEXICO
SCALE OF MILES
0 100 200 300 400 500
NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.
MEXICO AND VICINITY
SCALE OF MILES
ISTHMUS OF NICARAGUA
SCALE OF MILES
CENTRAL AMERICA
AND THE
WEST INDIES
SCALE OF MILES
100 200 300 400 500
Time when Noon at Greenwich
5.40 A.M.
5.00 A.M.
5.20 A.M.
5.40 A.M.
6.00 A.M.
6.00 A.M.
6.20 A.M.
6.40 A.M.
7.00 A.M.
7.20 A.M.
7.40 A.M.
8.00 A.M.
TROPIC OF CANCER
GULF OF MEXICO
CARIBBEAN SEA
PACIFIC OCEAN
ATLANTIC OCEAN
Longitude West from Greenwich

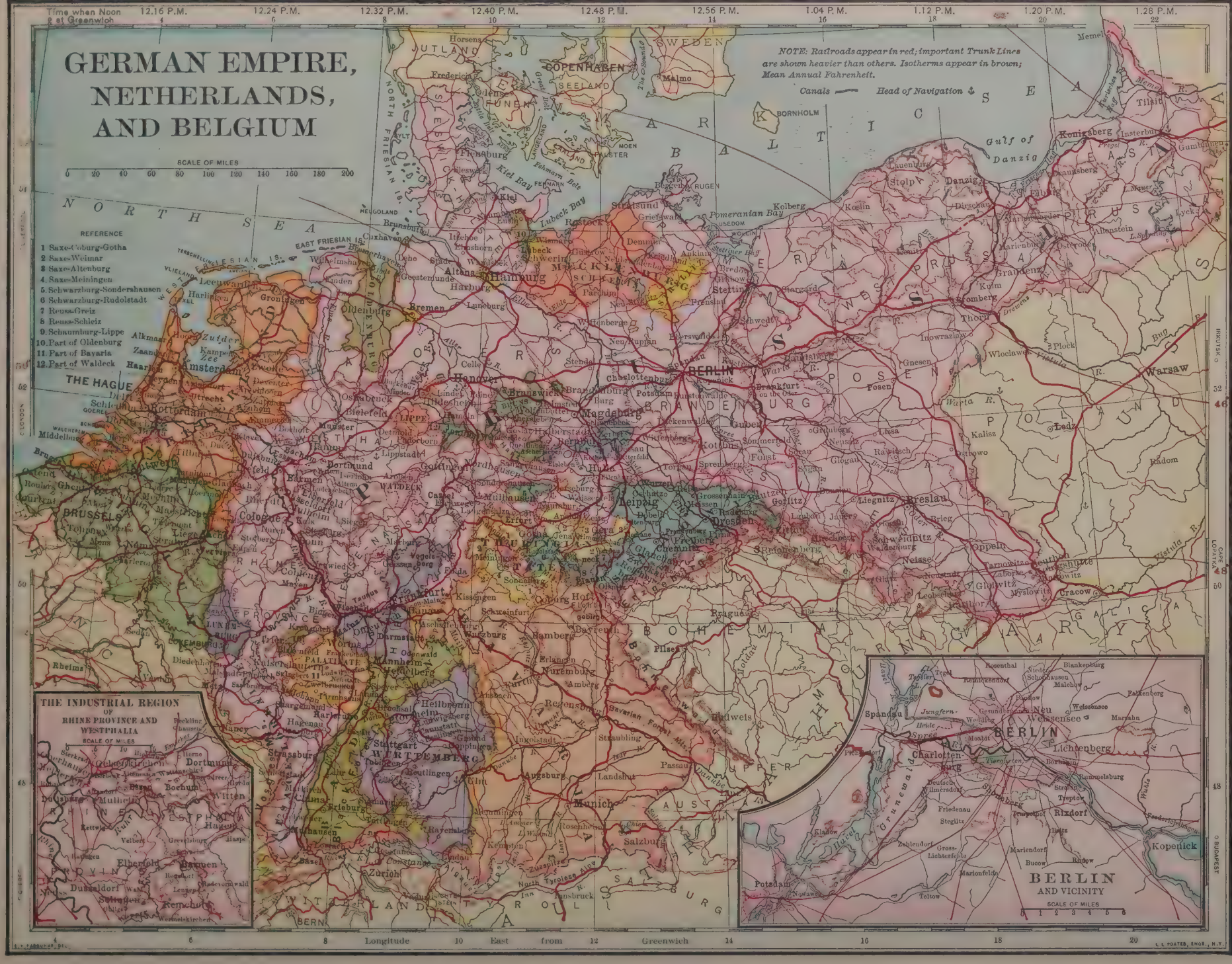
SOUTH AMERICA
SCALE OF MILES
0 100 200 300 400 500 600 700 800
NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.
Canals
Head of Navigation
Time when Noon at Greenwich 6 40 A.M.
7.20 A.M.
8.00 A.M.
8.40 A.M.
9.20 A.M.
CARIBBEAN SEA
ATLANTIC OCEAN
PACIFIC OCEAN
VENEZUELA
COLOMBIA
ECUADOR
PERU
BOLIVIA
BRAZIL
PARAGUAY
URUGUAY
CHILE
GUIANA
CARACAS
BOGOTA
QUITO
LIMA
SUCRE
ASUNCION
SANTIAGO
BUENOS AIRES
MONTEVIDEO
RIO DE JANEIRO
GEORGETOWN
PARAMARIBO
CAYENNE
Isthmus of Panama
Mouths of the Amazon
Plateau
EQUATOR
TROPIC OF CAPRICORN
GALAPAGOS ISLANDS (To Ecuador)
LIMA AND CALLAO
SCALE OF MILES
CITY AND BAY OF VALPARAISO
SCALE OF MILES
BUENOS AIRES AND VICINITY
SCALE OF MILES
CITY AND BAY OF MONTEVIDEO
SCALE OF MILES
CITY AND HARBOR OF RIO DE JANEIRO
SCALE OF MILES
Longitude 80 West 70 from 60 Greenwich 50

Time when Noon at Greenwich
10.00 A.M.
10.40 A.M.
11 20 A.M.
Noon
12.40 P.M.
1.20 P.M.
2.00 P.M.
2.40 P.M.
3.20 P.M.
4.40 P.M.
EUROPE
SCALE OF MILES
0 100 200 300 400 500
NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.
Canals
Head of Navigation
Longitude West from Greenwich
Longitude East from Greenwich
L. L. POATES, ENGR., N.Y.

CENTRAL EUROPE
SCALE OF MILES
0 100 200 300 400
NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.
Canals
Head of Navigation
Time when Noon at Greenwich
11.40 P.M. 12.20 P.M. 1.00 P.M. 1.40 P.M. 2.00 P.M.
Noon 12.40 P.M. 1.20 P.M.
Longitude East from Greenwich
NORTH SEA
BALTIC SEA
ENGLISH CHANNEL
BAY OF BISCAY
MEDITERRANEAN SEA
TYRRHENIAN SEA
ADRIATIC SEA
IONIAN SEA
AEGEAN SEA
BLACK SEA
ENGLAND
FRANCE
BELGIUM
NETHERLANDS
GERMANY
SWITZERLAND
AUSTRIA-HUNGARY
ITALY
SPAIN
ALGERIA
TUNIS
RUSSIA
ROUMANIA
SERVIA
BULGARIA
EASTERN ROUMELIA
TURKEY
GREECE
CRETE
CORSICA
SARDINIA
SICILY
BALEARIC ISLES
LONDON
PARIS
BERLIN
VIENNA
Budapest
BUCHAREST
BELGRADE
SOFIA
CONSTANTINOPLE
ROME
Naples
Warsaw
Hamburg
Munich
Milan
Venice
Trieste
Marseilles
Barcelona
Lyons
Bordeaux
Palermo
Catania
Smyrna
ATHENS
Saloniki
Valetta
MALTA
Pyrenees
Alps
Carpathians
Cevennes
Balkan Mts.
Danube R.
Rhine R.
Rhone R.
Elbe R.
Oder R.
Vistula R.
Dniester R.
Bug R.
Volga R.
Dnieper R.
Don R.
Kiev
Odessa
Sebastopol
Constantinople
Sea of Marmora
Dardanelles
Bosporus
Crete
Corfu
Malta
Sicily
Sardinia
Corsica
Balearic Isles
Majorca
Minorca
Ivica
Formentera
Cabrera
Valencia
Barcelona
Carthagena
Algiers
Tunis
Bizerta
Cape Bon
Pantellaria
Gozzo
Malta
Naples
Rome
Florence
Genoa
Milan
Turin
Venice
Trieste
Vienna
Prague
Berlin
Hamburg
Munich
Frankfurt
Cologne
Amsterdam
Rotterdam
Brussels
Paris
London
Liverpool
Manchester
Birmingham
Bristol
Southampton
Dover
Calais
Boulogne
Dunkirk
Ostend
Antwerp
Ghent
Lille
Metz
Strasburg
Nancy
Lyons
Marseilles
Toulon
Nice
Monaco
Bordeaux
Toulouse
Montpellier
Nimes
Avignon
Perpignan
Biarritz
Bayonne
Brest
Cherbourg
Le Havre
Rouen
Amiens
Orleans
Tours
Nantes
Limoges
Clermont
Grenoble
Geneva
Lausanne
Zurich
Basle
Berne
Lucerne
Innsbruck
Salzburg
Linz
Budapest
Debreczin
Szegedin
Pesth
Buda
Agram
Trieste
Fiume
Spalato
Ragusa
Cattaro
Scutari
Durazzo
Valona
Janina
Larissa
Salonika
Gallipoli
Adrianople
Philippopolis
Sofia
Varna
Rustchuk
Silistria
Bucharest
Galatz
Braila
Ploesti
Jassy
Kishenef
Lemberg
Przemysl
Tarnopol
Brody
Dubno
Kovel
Brest Litovsk
Grodno
Bialystok
Lodz
Kalisch
Posen
Thorn
Bromberg
Dantzic
Konigsberg
Memel
Libau
Windau
Mitau
Riga
Dorpat
Pernau
Reval
St. Petersburg
Moscow
Smolensk
Minsk
Pinsk
Kiev
Odessa
Sebastopol
Kertch
Taganrog
Rostov
Ekaterinoslav
Kharkov
Poltava
Kursk
Orel
Tula
Riazan
Nijni Novgorod
Kazan
Simbirsk
Saratov
Samara
Orenburg
Ufa
Perm
Viatka
Kostroma
Yaroslaw
Tver
Novgorod
Archangel
Vologda
Tobolsk
Tomsk
Irkutsk
Yakutsk
Kamchatka
Behring Sea
Sea of Okhotsk
Sea of Japan
Vladivostock
Nagasaki
Yokohama
Tokio
Osaka
Kioto
Hakodate
Japan
China
Manchuria
Mongolia
Siberia
Persia
Caspian Sea
Aral Sea
Lake Baikal
Lake Balaton
Lake Constance
Lake Geneva
Lake Como
Lake Garda
Lake Maggiore
Lake Lucerne
Lake Zurich
Lake Neufchatel
Lake Thun
Lake Brienz
Lake Wallenstadt
Lake Starnberg
Lake Chiemsee
Lake Ammersee
Lake Wurmsee
Lake Traunsee
Lake Hallstadt
Lake Attersee
Lake Mondsee
Lake Wolfgangsee
Lake Gmunden
Lake Konigsee
Lake Tegernsee
Lake Schliersee
Lake Walchensee
Lake Kochelsee
Lake Staffelsee
Lake Ammersee
Lake Starnberg
Lake Chiemsee
Lake Wurmsee
Lake Traunsee
Lake Hallstadt
Lake Attersee
Lake Mondsee
Lake Wolfgangsee
Lake Gmunden
Lake Konigsee
Lake Tegernsee
Lake Schliersee
Lake Walchensee
Lake Kochelsee
Lake Staffelsee

Time when Noon at Greenwich
11.20 A.M.
11.28 A.M.
11.36 A.M.
11.44 A.M.
11.52 A.M.
Noon
12.08 P.M.
BRITISH ISLES
SCALE OF MILES
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150
NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.
Canals
Head of Navigation
Same scale as large map
SHETLAND ISLANDS
ORKNEY ISLANDS
Sumburgh Hd.
Duncansby Hd.
DUBLIN AND VICINITY
SCALE OF MILES
DUBLIN
Dublin Bay
EDINBURGH AND VICINITY
SCALE OF MILES
EDINBURGH
Leith
Portobello
Arthurs Seat
FIRTH OF FORTH
LONDON AND VICINITY
SCALE OF MILES
LONDON
Tottenham
West Ham
Kingston
Croydon
ATLANTIC OCEAN
NORTH SEA
IRISH SEA
ENGLISH CHANNEL
St. George's Channel
Bristol Channel
Cardigan Bay
Carmarthen Bay
Solway Firth
Firth of Clyde
Firth of Forth
Moray Firth
Pentland Firth
Little Minch
The Minch
Gulf of the Hebrides
North Channel
Dover Str.
The Wash
Humber R.
Thames R.
Severn R.
Mersey R.
Dundrum B.
Galway B.
Tralee B.
Wexford B.
Bantry B.
Donegal Bay
Sligo B.
Clew B.
Menai Str.
Swansea B.
Barnstaple B.
Bude Bay
Lyme Bay
Portland Bill
Start Pt.
Lizard Pt.
Lands End
Carnsore Pt.
Mizen Hd.
Slyne Hd.
Benwoe Hd.
Malin Hd.
Fair I.
Shetland Islands
Orkney Islands
Butt of Lewis
Stornoway
C. Wrath
Strathy Pt.
Dunnet Hd.
Kirkwall
Thurso
Wick
Ben More
Helmsdale
Dornoch Firth
Tarbat Ness
Kinnaird Hd.
Fraserburgh
Buchan Ness
Aberdeen
Stonehaven
Montrose
Arbroath
Dundee
Perth
St. Andrews
Fife Ness
Kirkcaldy
Dunbar
St. Abbs Head
Berwick on Tweed
Farne Is.
Holy I.
Inverness
Ullapool
Tain
Ben Macdhui
Balmoral
Braemar
Ballater
Strome Ferry
Kyle of Lochalsh
Glenelg
Kingussie
Aviemore
Elgin
Banff
Peterhead
Cromarty
Dingwall
Garve
Loch Ness
Loch Lomond
Loch Katrine
Loch Tay
Loch Rannoch
Loch Leven
Loch Awe
Loch Fyne
Loch Etive
Loch Linnhe
Loch Shiel
Loch Maree
Loch Broom
Loch Inver
Loch Eriboll
Loch Erne
Loch Allen
Loch Corrib
Loch Mask
Loch Conn
Loch Gill
Loch Swilly
Loch Foyle
Loch Neagh
Lough Derg
Lough Ree
Lough Erne
Lough Allen
Lough Gara
Lough Mask
Lough Corrib
Lough Conn
Lough Gill
Lough Swilly
Lough Foyle
Lough

Time when Noon at Greenwich
Noon 0
12.16 P.M. 4
12.32 P.M. 8
12.48 P.M. 12
1.04 P.M. 16
1.20 P.M. 20
1.36 P.M. 24
1.52 P.M. 28
2.08 P.M. 32
2.24 P.M. 36
SCANDINAVIA
SCALE OF MILES
0 20 40 60 80 100 120 140 160 180 200
NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.
ICELAND
Same scale as Denmark
CHRISTIANIA AND VICINITY
SCALE OF MILES
STOCKHOLM AND VICINITY
SCALE OF MILES
COPENHAGEN AND VICINITY
SCALE OF MILES
DANISH WEST INDIES
FAROE ISLANDS
ATLANTIC OCEAN
NORTH SEA
BALTIC SEA
GULF OF FINLAND
GULF OF BOTHNIA
Gulf of Riga
Longitude 20 East from 24 Greenwich

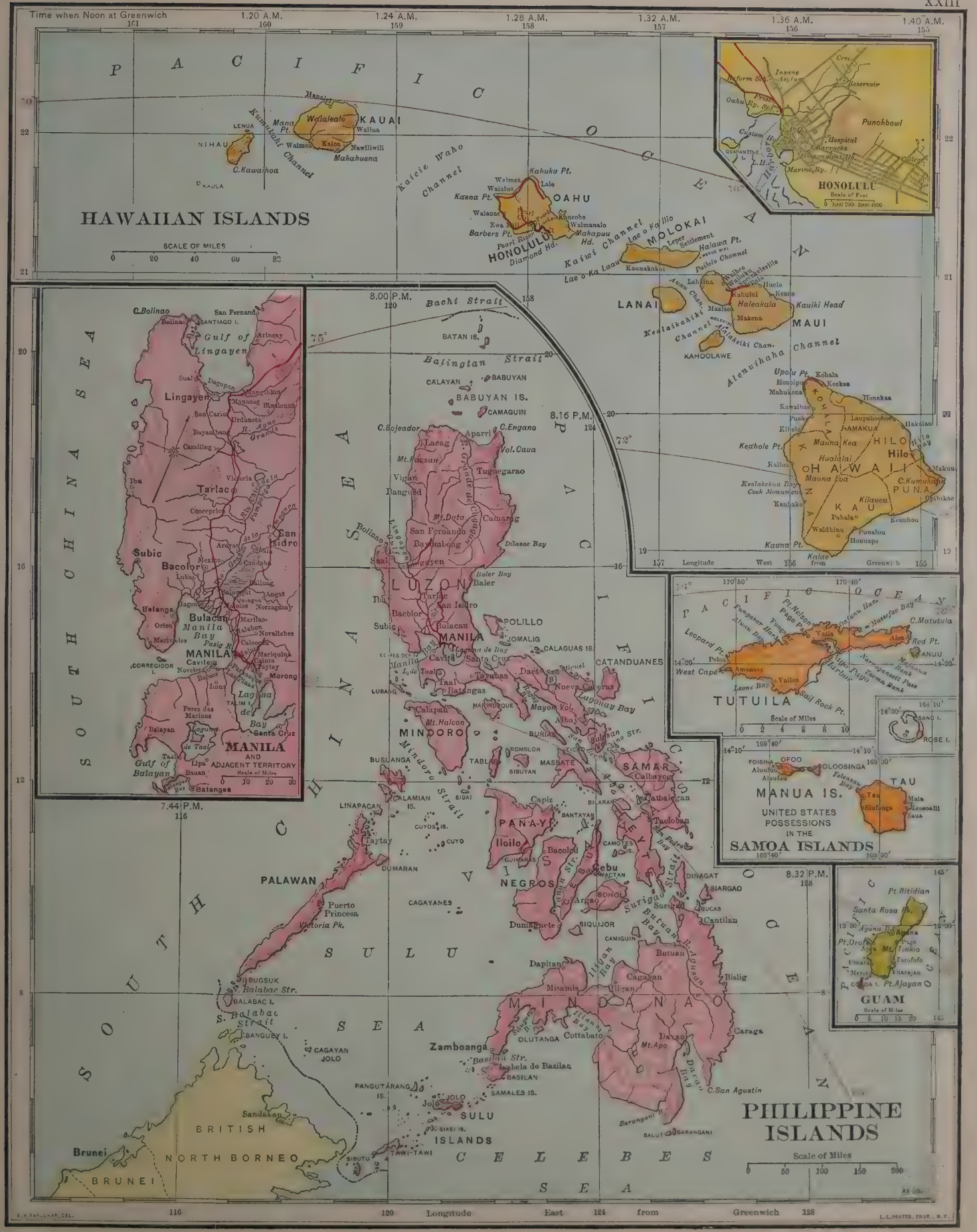

GERMAN EMPIRE, NETHERLANDS, AND BELGIUM
NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.
Canals
Head of Navigation
SCALE OF MILES
0 20 40 60 80 100 120 140 160 180 200
REFERENCE
1 Saxe-Coburg-Gotha
2 Saxe-Weimar
3 Saxe-Altenburg
4 Saxe-Meiningen
5 Schwarzburg-Sondershausen
6 Schwarzburg-Rudolstadt
7 Reuss-Greiz
8 Reuss-Schleiz
9 Schaumburg-Lippe
10 Part of Oldenburg
11 Part of Bavaria
12 Part of Waldeck
Time when Noon at Greenwich
12.16 P.M.
12.24 P.M.
12.32 P.M.
12.40 P.M.
12.48 P.M.
12.56 P.M.
1.04 P.M.
1.12 P.M.
1.20 P.M.
1.28 P.M.
Longitude East from Greenwich
THE INDUSTRIAL REGION OF RHINE PROVINCE AND WESTPHALIA
SCALE OF MILES
BERLIN AND VICINITY
SCALE OF MILES
0 1 2 3 4 5 6
NORTH SEA
BALTIC SEA
BERLIN
HAMBURG
MUNICH
THE HAGUE
BRUSSELS
COPENHAGEN
Gulf of Danzig
Pomeranian Bay
Kiel Bay
Lübeck Bay
Warsaw
Königsberg
Danzig
Stettin
Breslau
Dresden
Leipzig
Hanover
Cologne
Frankfurt
Nuremberg
Stuttgart
Strassburg
Zurich
Salzburg
Prague
Pilsen
Budweis
Linz
Vienna
Lodz
Posen
Thorn
Bromberg
Graudenz
Kolberg
Stralsund
Rostock
Lübeck
Bremen
Magdeburg
Brunswick
Hanover
Cassel
Erfurt
Coburg
Bamberg
Ratisbon
Augsburg
Ulm
Innsbruck
Munich
Potsdam
Spandau
Charlottenburg
Lichtenberg
Weissensee
Rixdorf
Köpenick
Tempelhof
Steglitz
Zehlendorf
Friedenau
Tegel
Pankow
Malchow
Marzahn
Falkenberg
Rummelsburg
Tempelhofer Feld
Grunewald
Havel
Spree
Jungfern-See
Wannsee
Teltow
Nowawes
Marienfelde
Mariendorf
Gross-Lichterfelde
Deutsch-Wilmersdorf
Schöneberg
Tempelhof
Treptow
Baumschulenweg
Britz
Buckow
Rudow
Blankenburg
Rosenthal
Niederschönhausen
Reinickendorf
Weddingen
Moabit
Hrade
Prenzlauer Berg
Friedrichshain
Lichtenberg
Marzahn
Weissensee
Pankow
Tegel
Spandau
Charlottenburg
Grunewald
Havel
Spree
Jungfern-See
Wannsee
Teltow
Nowawes
Potsdam
Marienfelde
Mariendorf
Gross-Lichterfelde
Deutsch-Wilmersdorf
Schöneberg
Tempelhof
Treptow
Baumschulenweg
Britz
Buckow
Rudow
Köpenick
Steglitz
Zehlendorf
Friedenau
Tegel
Pankow
Malchow
Marzahn
Falkenberg
Rummelsburg
Tempelhofer Feld
Grunewald
Havel
Spree
Jungfern-See
Wannsee
Teltow
Nowawes
Potsdam
Marienfelde
Mariendorf
Gross-Lichterfelde
Deutsch-Wilmersdorf
Schöneberg
Tempelhof
Treptow
Baumschulenweg
Britz
Buckow
Rudow
Köpenick
Steglitz
Zehlendorf
Friedenau
Tegel
Pankow
Malchow
Marzahn
Falkenberg
Rummelsburg
Tempelhofer Feld
Grunewald
Havel
Spree
Jungfern-See
Wannsee
Teltow
Nowawes
Potsdam
Marienfelde
Mariendorf
Gross-Lichterfelde
Deutsch-Wilmersdorf
Schöneberg
Tempelhof
Treptow
Baumschulenweg
Britz
Buckow
Rudow
Köpenick
Steglitz
Zehlendorf
Friedenau
L. L. POATES, ENGR., N.Y.

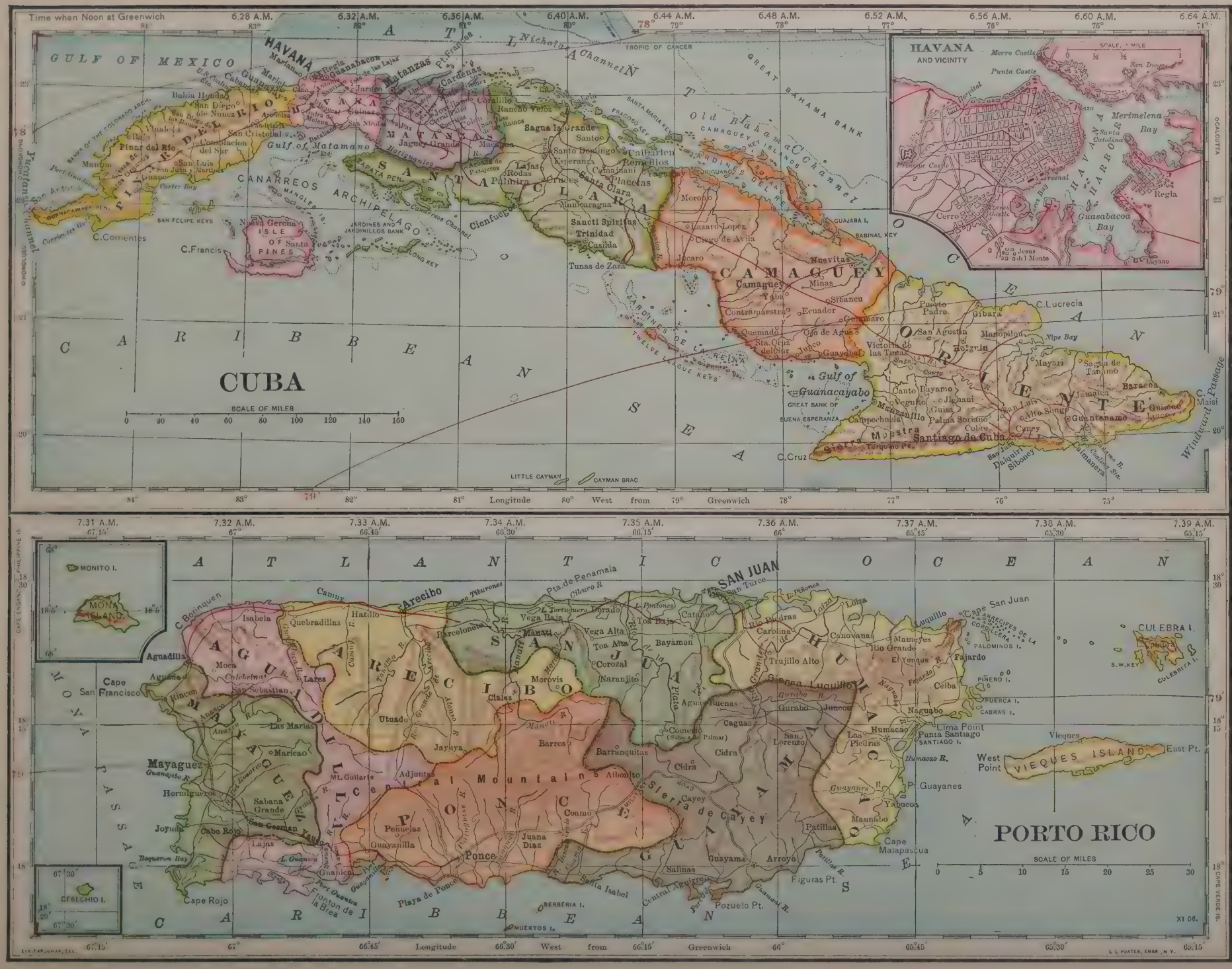
Time when Noon at Greenwich
4.00 P.M.
4.40 P.M.
5.20 P.M.
6.00 P.M.
6.40 P.M.
7.20 P.M.
8.00 P.M.
8.40 P.M.
9.20 P.M
CHINA, JAPAN, INDIA AND INDO CHINA
SCALE OF MILES
0 100 200 300 400 500 600 700 800
NOTE: Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.
Canals
Head of Navigation
VII 07.
Longitude East from Greenwich
RUSSIAN TURKESTAN
CHINESE EMPIRE
MONGOLIA
JAPAN
INDIA
AFGHANISTAN
TIBET
BAY OF BENGAL
ARABIAN SEA
SEA OF JAPAN
YELLOW SEA
EAST CHINA SEA
SOUTH CHINA SEA
PACIFIC OCEAN
PEKING
SEOUL
TOKYO
CALCUTTA
Bombay
BANGKOK
MANILA
HANOI
CEYLON
PHILIPPINE ISLANDS
FORMOSA
HAINAN
TROPIC OF CANCER
E.Y. FARQUHAR, DEL.
L.L. POATES, ENGR.

Time when Noon at Greenwich 10.40 A.M. 11.20 A.M. Noon 12.40 P.M. 1.20 P.M. 2.00 P.M. 2.40 P.M. 3.20 P.M. 4.00 P.M. 4.40 P.M.
AFRICA
SCALE OF MILES
0 100 200 300 400 500 600 700 800 900 1000
To Gr. Britain
To France
To Germany
To Portugal
To Italy
To Spain
To Turkey
To Independent
NOTE. Railroads appear in red. Important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.
Canals
Head of Navigation
THE NILE DELTA
SCALE OF MILES
0 25 50 75 100
SOUTH AFRICA
SCALE OF MILES
0 100 200 300
Longitude 10 West 0 Longitude 10 East 20 from 30 Greenwich 40 50 60

Time when Noon 6.40 P.M. at Greenwich
7.20 P.M.
8.00 P.M.
8.40 P.M.
9.20 P.M.
10.00 P.M.
10.40 P.M.
11.20 P.M.
Midnight
AUSTRALIA
AND PACIFIC ISLANDS
SCALE OF MILES
0 200 400 600 800 1000
NOTE. Railroads appear in red; important Trunk Lines are shown heavier than others. Isotherms appear in brown; Mean Annual Fahrenheit.
INDIAN OCEAN
PACIFIC OCEAN
AUSTRALIA
NEW GUINEA
TASMANIA
NEW ZEALAND
PHILIPPINE ISLANDS
CAROLINE ISLANDS
MARSHALL ISLANDS
GILBERT ISLANDS
SOLOMON ISLANDS
NEW HEBRIDES
NEW CALEDONIA
FIJI IS.
SAMOA IS.
TONGA OR FRIENDLY IS.
PHOENIX IS.
ELLICE ISLANDS
UNION IS.
BISMARCK ARCHIPELAGO
LADRONE IS.
GUAM
EQUATOR
TROPIC OF CAPRICORN
CORAL SEA
ARAFURA SEA
TIMOR SEA
BANDA SEA
CELEBES SEA
SOUTH CHINA SEA
MANILA
SINGAPORE
BATAVIA
SYDNEY
MELBOURNE
BRISBANE
PERTH
ADELAIDE
HOBART
Longitude East from Greenwich
Longitude West

THE ROMAN EMPIRE
At the Time of its Greatest Extent
SCALE OF MILES
0 100 200 300 400 500
ROME
SCALE OF MILES
ANCIENT ITALY
SCALE OF MILES
0 20 40 60 80 100
ANCIENT GREECE
SCALE OF MILES
0 10 20 30 40 50 60
ATHENS
SCALE OF MILES
Longitude from Greenwich
East


Time when Noon at Greenwich
1.20 A.M.
1.24 A.M.
1.28 A.M.
1.32 A.M.
1.36 A.M.
1.40 A.M.
PACIFIC OCEAN
HAWAIIAN ISLANDS
SCALE OF MILES
KAUAI
Waialeale
Hanalei
Waimea
Kalon
Nawiliwili
Makahuena
Mana Pt.
Kaumakahi Channel
LENUA
NIHAU
C. Kawaihoa
KAULA
Kaieie Waho Channel
OAHU
Kahuku Pt.
Laie
Waimea
Waialua
Kaena Pt.
Waianae
Ewa
Barbers Pt.
Pearl River
Honolulu
Diamond Hd.
Waimanalo
Makapuu Hd.
Punchbowl
Hospital
Barracks
Marine Ry.
College
HONOLULU
Scale of Feet
Kaiwi Channel
MOLOKAI
Lae o Kaiilio
Leper Settlement
Halawa Pt.
Kaunakakai
Lae o Ka Laau
Pailolo Channel
LANAI
Lahaina
Kahului
Haleakala
Makena
Kealaikahiki Channel
KAHOOLAWE
MAUI
Kauiki Head
Alenuihaha Channel
Upolu Pt.
Kohala
Honolulu
Keokea
Honokaa
Kawaihae
Puako
Laupahoehoe
Hakalau
Kiholo
KAMAKUA
Keahole Pt.
Mauna Kea
HILO
Hilo
Hualalai
HAWAII
Kailua
Mauna Loa
C. Kumukahi
Kealakekua Bay
Cook Monument
PUNA
Kilauea
Kau
Kauhako
Pahala
Keauhou
Waldhinu
Punaluu
Honuapo
Kauna Pt.
Kalae
Longitude West 156 from Greenwich 155
SOUTH CHINA SEA
Gulf of Lingayen
C. Bolinao
San Fernando
Bolinao
SANTIAGO I.
Lingayen
Agno R.
Tarlac
Subic
Bacolor
Bulacan
Manila Bay
MANILA
CORREGIDOR I.
Cavite
Morong
Laguna de Bay
TALIM I.
Santa Cruz
Gulf of Balayan
Batangas
MANILA AND ADJACENT TERRITORY
Scale of Miles
Bachi Strait
BATAN IS.
Balintang Strait
BABUYAN
CALAYAN
BABUYAN IS.
CAMAGUIN
C. Bojeador
C. Engano
Aparri
Lacag
Vigan
Mt. Pacsan
Tuguegarao
Vol. Cana
Dinguded
Mt. Data
Camarag
San Fernando
Dasumalong
Dilasac Bay
LUZON
Baler Bay
Baler
Bacolor
Bulacan
POLILLO
MANILA
JOMALIG
CALAGUAS IS.
Taal
Batangas
CATANDUANES
Nueva Caceres
Lagonoy Bay
Albay
Mt. Halcon
MINDORO
BURIAS
Mindoro Strait
BUSUANGA
TABLAS
ROMBLON
MASBATE
SIBUYAN
SAMAR
Calbayog
Catbalogan
Tacloban
Surigao Str.
LINAPACAN
CALAMIAN IS.
CUYOS IS.
CUYO
Capiz
BANTAYAN
PANAY
Iloilo
GUIMARAS
Bacolod
CAMOTES IS.
Cebu
MACTAN
DINAGAT
SIARGAO
BOHOL
Tagbilaran
Dumaguete
SIQUIJOR
CAMIGUIN
Cantilan
Butuan
Agusan R.
Bislig
Dapitan
Misamis
Iligan
Iligan Bay
MINDANAO
Caraga
Cagayan
Zamboanga
Basilan Str.
Isabela de Basilan
BASILAN
Cottabato
Mt. Apo
Davao
Davao Gulf
C. San Agustin
OLUTANGA
PALAWAN
Puerto Princesa
Victoria Pk.
CAGAYANES
DUMARAN
BUGSUK
Balabac Str.
BALABAC I.
S. Balabac Strait
BANGUEY I.
CAGAYAN JOLO
PANGUTARANG IS.
JOLO
SULU ISLANDS
SIASI IS.
TAWI-TAWI
SIBUTU
Sandakan
BRITISH NORTH BORNEO
Brunei
BRUNEI
SULU SEA
CELEBES SEA
PHILIPPINE ISLANDS
Scale of Miles
8.00 P.M.
8.16 P.M.
7.44 P.M.
8.32 P.M.
Longitude East 116 120 124 from Greenwich 128
PACIFIC OCEAN
TUTUILA
Pt. Nelson
Pago Pago
Vaiia
Leopard Pt.
West Cape
Amanave
Vailoa
Leone Bay
Sail Rock Pt.
C. Matutula
Red Pt.
ANUU
Masefau Bay
Fagasa Bay
Aunuu I.
Scale of Miles
SAND I.
ROSE I.
MANUA IS.
UNITED STATES POSSESSIONS IN THE
SAMOA ISLANDS
FOISINA
OFOO
OLOOSINGA
Alaufau
TAU
Tau
Slufanga
Mala
Leosealii
Saua
GUAM
Pt. Ritidian
Santa Rosa Pt.
Agana
Pt. Orote
Tinkio
Mt.
Tarofofo
Umatac
Merizo
Inarajan
Pt. Ajayan


Time when Noon at Greenwich
6.28 A.M.
6.32 A.M.
6.36 A.M.
6.40 A.M.
6.44 A.M.
6.48 A.M.
6.52 A.M.
6.56 A.M.
6.60 A.M.
6.64 A.M.
ATLANTIC OCEAN
GULF OF MEXICO
TROPIC OF CANCER
GREAT BAHAMA BANK
Old Bahama Channel
Nicholas Channel
HAVANA
Matanzas
Cardenas
Pt. Frailes
Pinar del Rio
Gulf of Matamoros
CANARREOS ARCHIPELAGO
SAN FELIPE KEYS
C. Corrientes
C. Francis
ISLE OF PINES
Cienfuegos
Sagua la Grande
Caibarien
Remedios
Santa Clara
Placetas
Sancti Spiritus
Trinidad
Casilda
Tunas de Zaza
Morón
Lazaro Lopez
Cayo de Avila
GUAJABA I.
SABINAL KEY
CAMAGUEY
Camaguey
Nuevitas
Minas
Sibanicu
Contramaestra
Ecuador
Puerto Padre
Gibara
C. Lucrecia
Guimaro
San Agustin
Manopilon
Nipe Bay
Victoria de las Tunas
Holguin
Mayari
Sagua de Tanamo
Baracoa
Guaycabo
Jobco
Sta. Cruz del Sur
Ojo de Agua
Quemado
Gulf of Guanacayabo
GREAT BANK OF BUENA ESPERANZA
Canto
Bayamo
Jiguani
Yeguito
Guisa
Manzanillo
Campechuela
Palma Soriano
Alto Songo
Guantanamo
Caney
Cobre
Sierra Maestra
Santiago de Cuba
C. Cruz
C. Maisi
Windward Passage
JARDINES DE LA REINA
TWELVE LEAGUE KEYS
LITTLE CAYMAN
CAYMAN BRAC
CUBA
SCALE OF MILES
0 20 40 60 80 100 120 140 160
81° 83° 79° 82° 81° Longitude 80° West from 79° Greenwich 78° 77° 76° 75°
HAVANA
AND VICINITY
SCALE 1 MILE
Morro Castle
Punta Castle
Merimelena Bay
HAVANA HARBOR
Regla
Guasabacoa Bay
Cerro
Principe Castle
Jesus del Monte
La Cayano
7.31 A.M.
7.32 A.M.
7.33 A.M.
7.34 A.M.
7.35 A.M.
7.36 A.M.
7.37 A.M.
7.38 A.M.
7.39 A.M.
MONITO I.
MONA ISLAND
MONA PASSAGE
CAPE ENGANO
PHILIPPINE IS.
SAN JUAN
Arecibo
C. Botinquen
Camuy
Pta. de Penamala
Cibuco R.
Isabela
Quebradillas
Hatillo
Vega Baja
Vega Alta
Manati
Barceloneta
Toa Baja
Catano
Bayamon
Toa Alta
Corozal
Naranjito
Morovis
Ciales
Utuado
Aguadilla
Moca
Aguada
Cape San Francisco
Rincon
Aguada
Lares
San Sebastian
Las Marias
Maricao
Mayaguez
Hormigueros
Sabana Grande
Joyuda
Cabo Rojo
San German
Lajas
Boqueron Bay
Guanica
Port Guanica
Fronton de la Brea
Cape Rojo
Playa de Ponce
Ponce
Penuelas
Guayanilla
Juana Diaz
Coamo
Adjuntas
Mt. Guilarte
Central Mountains
Sierra de Cayey
Aibonito
Barros
Jayuya
Barranquitas
Comerio (Sabana del Palmar)
Cidra
Caguas
Aguas Buenas
Gurabo
Juncos
San Lorenzo
Las Piedras
Humacao
Punta Santiago
SANTIAGO I.
Humacao R.
Naguabo
Ceiba
Fajardo
El Yunque
Rio Grande
Canovanas
Carolina
Trujillo Alto
Sierra Luquillo
Loiza
Luquillo
Cape San Juan
ARRECIFES DE LA CORDILLERA
PALOMINOS I.
PIÑERO I.
PUERCA I.
CABRAS I.
CULEBRA I.
S.W. KEY
CULEBRITA I.
Vieques
West Point
VIEQUES ISLAND
East Pt.
Pt. Guayanes
Yabucoa
Maunabo
Patillas
Arroyo
Guayama
Salinas
Cape Malapascua
Figures Pt.
Pozuelo Pt.
Santa Isabel
Central Aguirre
Portugues R.
Guamani R.
BERBERIA I.
MUERTOS I.
DESECHIO I.
PORTO RICO
SCALE OF MILES
0 5 10 15 20 25 30
XI 08.
67° 66°45′ 66°30′ Longitude 66°15′ West from Greenwich 66° 65°45′ 65°30′ 65°15′

SUPPLEMENT: INSULAR POSSESSIONS, CUBA, AND PANAMA

PORTO RICO

Physical Features. Porto Rico is the smallest of the four islands of the Greater Antilles. It is about 95 miles long and 35 miles wide, and has over twice the area of Long Island in New York. The mountains extending through the island east and west are little more than a range of hills, the highest peak of which is about half a mile high. From these hills many streams flow into the sea. The small islands of Vieques (vē-ā′kās) and Culebra (kụ-lā′brȧ) to the east, and Mona to the west, belong to Porto Rico.

Government Building, San Juan.

The climate is warm and mild, with little difference in temperature between summer and winter. The rainfall is ample in nearly all parts of the island. The driest month is February; the rainiest is November. The prevailing winds are the northeast trades. Tropical hurricanes are not uncommon.

People. The Indian natives were subdued and destroyed by the Spaniards who settled on the island after its discovery by Columbus in 1493. After four centuries of Spanish rule, Porto Rico was ceded to the United States in 1898. The white inhabitants, mostly of Spanish descent, now number about 600,000, and the negroes about 360,000. Most of the people are uneducated; but schools have been provided for a large part of the children. The Governor is appointed by the President of the United States, but Porto Rico is not organized as a territory.

Industries. Timber is scarce, for the forests have been extensively cleared, and the hills may be cultivated to their very tops. Coffee, sugar cane, and tobacco are the leading products. Upland rice is cultivated on the hillsides, and much native Indian corn is grown. Fruits are produced in great abundance — especially bananas, oranges, pineapples, guavas, and cocoanuts. Some cotton is grown. Large herds of cattle are pastured on the lowlands, and horses of a small breed are also raised. Fowls are abundant.

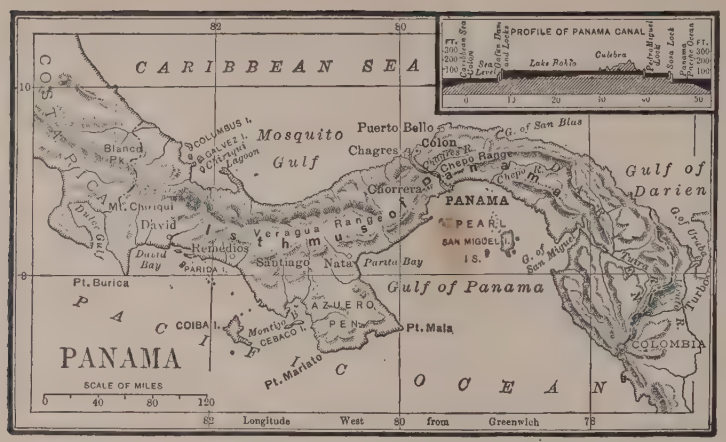
Commerce. About 200 miles of railroad are in operation, and there are many good wagon roads. The chief exports are sugar and molasses, coffee, tobacco, fruits, and cattle.

Cities. *San Juan*, the capital, was founded by Ponce de Leon in 1511, on one of the finest harbors in the West Indies. The city is surrounded by a massive wall, and has stately public buildings. The population is about 32,000. *Ponce* (pōn′sā), on the southern coast, is a city nearly as large. *Arecibo* (ä-rā-sē′bō), on the northern coast, is an important center and shipping port of the sugar industry.

REPUBLIC OF CUBA

Physical Features. Cuba has a length of 720 miles and an average breadth of 60 miles. Its area is about that of Pennsylvania. In the southeast, the mountains rise higher than the Appalachians; but the central range, as in Porto Rico, is hardly more than a series of hills. From the central mountains fertile meadows and plains slope gently down to the coast. The general course of most of the rivers is either north or south; but the two largest flow westward. Much of the coast is bordered with coral reefs and

The City and Harbor of Havana.



islands. The Isle of Pines, which belongs to Cuba, is nearly half as large as Delaware.

The climate is much like that of Porto Rico. Vegetation is luxuriant, and includes many different kinds of plants.

People. Cuba was discovered by Columbus in 1492, and settled by Spaniards under Velasquez in 1512. The native Indians were enslaved and destroyed. The severity of Spanish rule led to many rebellions, during one of which, in 1898, the United States compelled Spain to withdraw; in 1902 the republic of Cuba was proclaimed, under the protection of the United States. The population includes about 1,500,000 whites and over 600,000 blacks.

Industries. Some valuable lumber is cut, copper and iron ore are mined in the southeast, and asphalt is found in the central part of the island. But the great industry of Cuba is agriculture. The chief products are sugar cane and tobacco, for which Cuba is especially noted; but bananas, oranges, pineapples, corn, and sweet potatoes are also extensively produced. Some cattle and poultry are raised.

Inland commerce is aided by about 2500 miles of railroad, but there are few good common roads. The principal exports are sugar and molasses, tobacco, tropical fruits, and cabinet lumber.

Cities. *Havana*, with a population of about 300,000, is the capital, largest city, and chief seaport. It is picturesquely situated on a broad harbor, and has fine public buildings and parks. Havana is a great tobacco market, and manufactures many cigars and cigarettes. *Santiago de Cuba*, in the southeast, is the second city in size and importance. It has a population of about 50,000, and is the center of trade for the neighboring iron and copper mines. *Matan'zas* in the north and *Cienfuegos* (sē-ĕn-fwā'gōs) in the south are important seaports, and *Camaguey* (cä-mä'gwā) is the largest inland city.

REPUBLIC OF PANAMA

Physical Features. The republic of Panama is about 500 miles long, but only about 35 miles wide at its narrowest point. It is about as large as the state of Maine. It is traversed by a low mountain range, but in the west there are volcanic peaks about two miles high.

The climate is tropical, with an excessive rainfall. The northern coast is damp, hot, and unhealthful; but the highlands and most of the south coast have a more healthful climate.

Resources. Dense forests, containing valuable timber and dyewoods, cover most of the country. The soil, where cultivated, is very fertile. Gold, copper, iron, and other minerals are found.

People. For many years Panama was part of Colombia, but in 1903 it declared itself an independent republic.

The people number about 228,000, mostly of mixed Spanish, Indian, and negro origin. Many are engaged in agriculture and herding; but the chief industries are those centered about the partly constructed interoceanic canal, and in the railroad which crosses the isthmus. *Panama*, the chief city, with a population of 30,000, and *Colon* are the important seaports at the ends of both the railway and the canal.

The Panama Canal. The route of the canal crosses the isthmus at its lowest point, and is nearly 50 miles long. The first attempt to cut a canal there was made in 1878, by a French company, which failed after spending much money and doing only a small part of the work. In 1904 the unfinished work was sold to the United States, which is now constructing the canal. The proposed canal is to have six locks, with a summit level 85 feet above the sea. The width is to be 200 feet at bottom; depth, 45 feet.

Dense Tropical Growths, Hawaii.

Canal Zone. By a treaty made in 1903, the republic of Panama granted to the United States the perpetual use and control of a strip of territory known as the Canal Zone. This grant extends five miles on each side of the center line of the canal route and entirely across the isthmus, but does not include the cities of Panama and Colon.

TERRITORY OF HAWAII

Physical Features. The Territory of Hawaii comprises the Hawaiian Islands, which lie in the Pacific Ocean about 2500 miles southwest of San Francisco, in about the same latitude as Cuba. Their area is less than that of New Jersey. The largest island, Hawaii, is smaller than Connecticut. Each island was originally built up of lava outflows, and several volcanoes in the island of Hawaii are

Loading Sugar Cane on Cars.

still active. The greatest elevations are more than twice as high as any in the Appalachian Mountains. The surface is mountainous and much of it is very rough and uneven. The islands are fringed with coral reefs.

The climate is warm and very pleasant. The temperature is made equable by the vast surrounding ocean. The prevailing winds are from the northeast. The windward slopes receive much rain, but the leeward slope of Hawaii is rather dry.

Harbor of Honolulu.

Vegetation and Animals. The windward slopes are covered with a dense tropical growth, and the forests contain much valuable timber. Among the useful native trees and plants are the cocoanut, breadfruit, banana, and the wonderfully nutritive taro.

There are few kinds of native animals, besides birds. Pigs, dogs, and rats were introduced by man centuries ago. Recently imported goats and cattle have increased into wild herds.

People. Since Captain Cook discovered the islands in 1778, the natives have decreased from perhaps 300,000 to less than 40,000 in number; but the population now includes also more than 60,000 Japanese, about 25,000 Chinese, and nearly 30,000 whites. The natives were quickly educated and civilized by American missionaries in 1820 and later. Children of all races are now obliged to attend school. The islands were governed by native chiefs and monarchs till 1893; then the queen was deposed and a republic set up, which in 1898 was annexed to the United States, and two years later was organized as a territory.

Industries. The cultivation of sugar cane is by far the most important industry. The bulk of the sugar is shipped in its raw state to San Francisco, where it is refined. Coffee, which grows on the elevated lands, is also exported. Some rice is raised by the Chinese. The common garden vegetables, taro, and oranges, pineapples, bananas, and many other fruits produce abundantly. There are large sheep farms, and wild cattle are killed for their hides. Many fish are caught along the coast.

Nearly all the sea-borne commerce of the territory is with the main part of the United States.

Cities. *Honolulu*, the capital, has a population of about 39,000, and is a port of call for many vessels crossing the Pacific. The harbor is more than a mile long, and admits the largest ships. The city contains substantial government buildings and ship yards, iron works, planing mills, rice mills, and ice factories. *Hilo* (hē′lō), with about 20,000 inhabitants, has a beautiful situation on the island of Hawaii, and is next to Honolulu in importance.

THE PHILIPPINE ISLANDS

Physical Features. The Philippine Islands are about 600 miles southeast of China, in about the same latitude as Central America. Luzon and Mindanao (mēn-dä-nä′ō) are each larger than Indiana; together they include more than half the area of the whole group. The surface is much broken by mountain ranges and volcanoes. Several of the islands have peaks higher than any in the Appalachians. There are many water courses, the largest rivers being the Cagayan (cä-gä-yän′) in Luzon and the Agusan (ä-gu̇′sän) in Mindanao.

The climate varies considerably in different parts of the archipelago. In most of the lowlands it is tropical, with three seasons: the temperate, with an average temperature of about 78°, from November to February; the hot, from April to June, in which temperatures of 100° are occasionally reached; and the wet, from June to October, during which torrents of rain fall. Violent hurricanes, or typhoons, visit the northern islands.

Mayon Volcano, Luzon.

The Forests are of wide extent and contain many valuable kinds of timber — cedar, teak, dyewoods, ebony, and other beautiful cabinet woods. The forests also supply various resins, rubber, gutta percha, and other gums. The cocoanut palm flourishes everywhere, and bamboo, rattan, mangoes, and all Malayan fruits grow in abundance.

The Wild Animals include the monkey, deer, wild cat, alligator, turtle, python, and smaller snakes, of which only one kind is poisonous. Of birds there are several hundred species, and there are numerous beautiful butterflies and destructive ants.

A Street in Manila.

People. The Philippines were discovered by Magellan in 1521, and for nearly 400 years these islands were subject to Spain. After the Spanish-American war of 1898 they were ceded to the United States. For some years they were governed by appointed officers; but the natives have now been given some share in the government.

The people number about 7,650,000, mostly of Malay descent. About nine tenths of them are civilized Christians, including the Tagals (tä-gälz′) of Luzon, the Visayans (vē-sä′yänz) occupying several islands south of Luzon, and other peoples. In the far south are the Moros, who are Mohammedans. There are also many small wild tribes inhabiting different islands; a few woolly-haired Negritos, descended from the original inhabitants; and over 40,000 Chinese.

A Philippine Hemp Field.

Agriculture is the prevailing pursuit. Though rice is perhaps the chief crop, the entire product is used for food in the Philippines, and more is imported. Manila hemp, ugar cane, copra, and tobacco are produced and largely exported. Cacao and Indian corn (introduced from America), with bananas, vegetables, pineapple fiber, cotton, and pepper, are other products of importance.

The wild buffalo, or carabao, is domesticated, and is the beast of all work. Small horses, cattle, hogs, and poultry are also raised.

Manufacturing by machinery is not largely developed. The women weave by hand many beautiful textiles. Many cigars and cigarettes are manufactured, and carriages, furniture, pottery, hats, and metal work are produced for home use.

Commerce within the islands has suffered from the want of roads, and there are only about 200 miles of railroads — all in Luzon. Foreign commerce centers in the main ports where products are gathered for export.

Cities. *Manila*, the capital, is a city of 220,000 inhabitants, situated on a large bay of the same name. It is the main port for foreign commerce. Telegraph cables connect it with Hongkong and San Francisco. *Iloilo* (ē-lō-ē′lō) is the second city in importance, and has a large trade in sugar. *Cebu* is a well-built city and an important trade center. These cities are near the central part of the archipelago. *Laoag* (lou-äg′) in the far north, and Zamboanga (thämbo-än′ga) in the south, are also places of importance.

View on Pago Pago Harbor, Tutuila.

GUAM, ceded to the United States by Spain in 1898, is the largest and most populous of the Ladrones (la-drōnz′), a group of islands east of the Philippines. The people are partly descendants of immigrants from the Philippines. Guam is important only as a naval and coaling station, and cable landing.

TUTUILA AND MANUA ISLANDS are the eastern portion of the Samoa group, in the south Pacific Ocean, and were ceded to the United States in 1899. The natives resemble the Hawaiian natives, and are noted for their strength, bravery, and intelligence. The excellent harbor of Pago Pago is occupied as a naval and coaling station.

The United States also owns in the Pacific a number of islets with insignificant area — among them Midway and Wake.

MIDWAY ISLAND is an atoll in the middle of the north Pacific Ocean, and was occupied by the United States in 1867. Some money has been spent in improving the harbor there; but the chief importance of Midway is as a cable landing.

WAKE ISLAND is an atoll in the north Pacific Ocean, halfway between the Philippines and the Hawaiian Islands. It has no inhabitants, and was seized by the United States in 1899.

GEOGRAPHY OF OHIO.

By E. E. White, M.A., LL.D.

PHYSICAL FEATURES.

Location and Area. What lake forms most of the northern boundary of Ohio? What state is north of the western part of Ohio? What states bound Ohio on the east and southeast? What state on the south? What river separates Ohio from West Virginia and Kentucky?

What is the general shape of Ohio? Which of its boundaries is a straight line? Why is the northern boundary irregular; the southern boundary? Why are Lake Erie and the Ohio River called natural boundaries? What is the length of shore line on Lake Erie?

Between what parallels of latitude is Ohio situated? Between what meridians? Determine, by using the scale of miles, the greatest distance across the state from east to west; from north to south. If you knew the average length and the average width of the state, how could you find its area? Using the scale of miles, find by measurement the approximate area.

Ohio is situated in the eastern part of the Central Lowland. Lake Erie is its natural boundary on the north, and the Ohio River on the south and southeast. In outline the state is nearly square. Its longest east and west measurement is 225 miles, and its longest north and south measurement 210 miles. Its area is 41,040 square miles. Ohio is a little larger than Kentucky, about one seventh larger than Indiana, and nearly one fourth smaller than Illinois.

Surface. The larger part of the state lies in the lower Appalachian tableland, while portions of the western section belong to the prairie region. The eastern and southeastern sections are hilly, the hills often rising from 400 to 700 feet above the general level. The streams flow through wide and beautiful valleys. In the northwestern part there is an extensive tract, once called the Black Swamp, which is but a few feet above the level of Lake Erie. It was formerly heavily wooded, and is now one of the most fertile regions in the state.

The average elevation of the state is about 850 feet above the level of the sea. There are no mountains, but in several counties there are hills from 1200 to 1500 feet above sea level. The highest elevation (1540 feet) is in Logan county, near Bellefontaine. The plains of the greater part of Ohio are strewn with bowlders and other glacial drift deposited by the ice sheet which once covered this region.

The Maumee Valley above Toledo.

Drainage. How many great surface slopes are indicated by the rivers in Ohio? Into what body of water do the rivers of the northern slope flow? Into what do the rivers of the southern slope flow? Which of these slopes is the larger? How do you know this fact? Name five rivers in Ohio that flow into Lake Erie. Which of these rivers is the longest? Is this river in Ohio throughout its whole course? In what state is its principal source? Name five rivers in Ohio that flow into the Ohio River. Which of these rivers is the longest?

About one fourth of the state lies in the basin of Lake Erie, and has a northern slope. The rest lies in the valley of the Ohio River, and has an eastern and a southern slope. These two slopes are separated by a ridge of highlands called the Great Divide, which enters the state near the line between Ashtabula and Trumbull counties, and extends zigzag across it in a southwesterly direction, passing out in Mercer county. Its average elevation is about 1100 feet above the sea level, but it seldom rises perceptibly above the surrounding country.

The principal rivers flowing into Lake Erie are the Grand, Cuyahoga, Black, Vermilion, Huron, Sandusky, and Maumee. Most of them have rapid courses and afford valuable water power. The Maumee is navigable beyond Toledo, and the Sandusky to Fremont.

The principal tributaries of the Ohio are the Mahoning, Muskingum, Hocking, Scioto, Little Miami, and Miami.

The Ohio River is formed by the junction of the Allegheny and the Monongahela at Pittsburg, Pa. It enters Ohio near the middle of the eastern boundary, and flows along the southeastern and southern borders for 436 miles, receiving three fourths of the drainage of the state.

Ohio is an Iroquois name which the French explorers translated *La Belle Rivière* (the beautiful river). The river is navigable throughout its course as the boundary of the state (except in dry seasons), and for light-draught vessels to Pittsburg.

Lake Erie is 243 miles long, and 57 miles wide at its widest part. Its greatest ascertained depth is 210 feet, and its surface is 573 feet above the sea level. Its southern

 Copyright, 1898, by American Book Company.

CLEVELAND
AND VICINITY
SCALE OF MILES
0 1 2 3 4 5
Euclid
Collinwood
Glenville
Cleveland
P.O.
Fairmount
Lakewood
Rocky River
West Park
Kamms
S.Brooklyn
Warrensville
Willow
Randall
Parma
LAKE ERIE
CUYAHOGA
Longitude West 83 from Greenwich 82 81
Detroit
Windsor
Trenton
Amherstburg
Dundee
Monroe
Pigeon B.
Pointe Pelee
MIDDLE SISTER I.
EAST SISTER I.
POINTE PELEE I.
WEST SISTER I.
NORTH BASS I.
MIDDLE BASS I.
SOUTH BASS I.
Put-in-Bay
KELLEYS I.
Kelleys Island
Marblehead
Maumee B.
Sandusky
Vermilion
Lorain
Cleveland
W.Cleveland
Fairport
Painesville
Willoughby
Wickliffe
Euclid
Collinwood
E.Cleveland
Glenville
Chagrin Falls
Burton
Chardon
Little Mr.
Montville
Rockcreek
Hartsgrove
Andover
Orwell
Lindenville
Windsor
Conneaut
Ashtabula
Kingsville
Geneva
E.Plymouth
Austinburg
Pierpont
Jefferson
Mesopotamia
Kinsman
Cortland
Brookfield
Vienna
Hubbard
Girard
Youngstown
Struthers
Canfield
Lowellville
Berlin Center
Mineral Ridge
Warren
Niles
Newton Falls
Ravenna
Kent
Hiram
Garrettsville
Hudson
Mahua Sta.
Aurora
Bedford
Independence
Brecksville
Peninsula
Brooklyn
Newburg
Cuyahoga Falls
Middleburg
Wellsville
Parkman
Berea
Olmsted Falls
Elyria
N.Amherst
Amherst
Oberlin
Lagrange
Grafton
Wellington
Medina
Chippewa L.
Wadsworth
New Portage
Akron
Tallmadge
Rootstown
Mogadore
Barberton
Doylestown
Clinton
Sterling
Creston
Lodi
Seville
Chippewa
Milton
Jerusalem
Nova
Savannah
W.Salem
Polk
Shiloh
Blust
Ashland
Hayesville
Jeromeville
Smithville
Orrville
Dalton
Wooster
Fredericksburg
Sherrodsville
Canal Fulton
Louisville
Massillon
Canton
Navarre
Minerva
Alliance
Washingtonville
Salem
Leetonia
Columbiana
New Waterford
Palestine
Lisbon
Negley
Rogers
Petersburg
Berlin
New Baltimore
Youngstown
Struthers
Canfield
Lowellville
Berlin Center
Mineral Ridge
Warren
Niles
Newton Falls
Ravenna
Kent
Hiram
Garrettsville
Hudson
Mahua Sta.
Aurora
Bedford
Independence
Brecksville
Peninsula
Brooklyn
Newburg
Cuyahoga Falls
Middleburg
Wellsville
Parkman
Berea
Olmsted Falls
Elyria
N.Amherst
Amherst
Oberlin
Lagrange
Grafton
Wellington
Medina
Chippewa L.
Wadsworth
New Portage
Akron
Tallmadge
Rootstown
Mogadore
Barberton
Doylestown
Clinton
Sterling
Creston
Lodi
Seville
Chippewa
Milton
Jerusalem
Nova
Savannah
W.Salem
Polk
Shiloh
Blust
Ashland
Hayesville
Jeromeville
Smithville
Orrville
Dalton
Wooster
Fredericksburg
Sherrodsville
Canal Fulton
Louisville
Massillon
Canton
Navarre
Minerva
Alliance
Washingtonville
Salem
Leetonia
Columbiana
New Waterford
Palestine
Lisbon
Negley
Rogers
Petersburg
Berlin
New Baltimore
ASHTABULA
GEAUGA
CUYAHOGA
TRUMBULL
PORTAGE
SUMMIT
MEDINA
MAHONING
STARK
COLUMBIANA
CARROLL
HARRISON
JEFFERSON
BELMONT
MONROE
NOBLE
GUERNSEY
MUSKINGUM
TUSCARAWAS
HOLMES
WAYNE
ASHLAND
RICHLAND
CRAWFORD
WYANDOT
MARION
KNOX
COSHOCTON
LORAIN
ERIE
HURON
SANDUSKY
SENECA
WOOD
LUCAS
OTTAWA
FULTON
WILLIAMS
DEFIANCE
HENRY
PAULDING
PUTNAM
VANWERT
ALLEN
HARDIN
AUGLAIZE
MERCER
LOGAN
SHELBY
UNION
DELAWARE
MORROW
CHAMPAIGN
DARKE
MIAMI
CLARK
MADISON
PREBLE
MONTGOMERY
GREENE
FAYETTE
PICKAWAY
FRANKLIN
FAIRFIELD
PERRY
LICKING
MORGAN
HOCKING
VINTON
MEIGS
ATHENS
WASHINGTON
JACKSON
PIKE
SCIOTO
ADAMS
BROWN
CLERMONT
HAMILTON
WARREN
BUTLER
CLINTON
HIGHLAND
LAWRENCE
GALLIA
MEIGS
Toledo
Fostoria
Tiffin
Findlay
Bucyrus
Mansfield
Lima
Kenton
Marion
Ashley
Delaware
Springfield
Dayton
Xenia
Hamilton
Cincinnati
Middletown
Portsmouth
Ironton
Zanesville
Cambridge
Caldwell
Marietta
Athens
Pomeroy
Gallipolis
Chillicothe
Circleville
Lancaster
Newark
Coshocton
Millersburg
Wooster
Orrville
Ashland
Mansfield
Bucyrus
Tiffin
Fostoria
Findlay

Tank Farm in the Oil Region.

shore in Ohio is 220 miles in extent, and is indented by two considerable bays, Sandusky Bay and Maumee Bay.

There are also good harbors at Ashtabula, Cleveland, and Lorain (at the mouth of the Black River). The western part of the lake contains a number of islands, the largest belonging to Ohio being Kelleys Island, a few miles from Sandusky. Put-in-Bay Island is a summer resort. There are many small lakes in Portage and adjacent counties, and also in Mercer, Shelby, and other western counties.

Oil Wells near Findlay.

Climate and Soil. The climate of Ohio is mild and healthful, but subject to great extremes and sudden changes. In the northern part of the state the winters are as cold as in the same latitude nearer the Atlantic. On the shore of Lake Erie the temperature is affected by the water of the lake, and the winters are not so cold, nor the fall of snow so great, as a few miles inland. In southern Ohio the winters are milder than in the north.

The mean annual temperature in the state is about 51°; in the northern counties, 50°; in the valley of the Ohio, from 52° to 54°; on the watershed, about 48°. The average yearly rainfall in the state is about 38 inches, the average along the Ohio River being near 41 inches, on the lake shore about 36 inches, and in the central part of the state 38.5 inches. The prevailing winds in summer are from the southwest.

The soil, being mainly composed of glacial drift, is of great general fertility. In the northern counties clay predominates; in the northwest there is a sandy soil mixed with clay and loam; in the central and southern parts the soil is more loamy, and mixed with sand and clay. In the valleys of the rivers the soil is a rich alluvium deposited during their floods, which occur nearly every year.

Corn, wheat, oats, and other grains are grown in every county in the state. The central and southern counties produce a variety of cereals, and also tobacco, flax, and garden vegetables. The northern counties are especially adapted to grazing. The bottoms bordering the Muskingum, Scioto, and Miami rivers are the most productive corn-bearing lands in the United States.

Describe the surface of your county. What valuable minerals, if any, are found in it? What is the nature of the soil? What are the principal farm products? What are the principal native trees? What are the principal fruit trees? Name the wild animals; the domestic animals.

RESOURCES AND INDUSTRIES.

Agriculture. Climate and soil make Ohio one of the foremost agricultural states in the Union. It is specially noted for the variety and excellence of its farm products. In addition to the productions already mentioned, it grows large quantities of hay and vegetables. It also holds a leading place in stock-raising, wool-growing, dairying, and fruit culture. Grapes of the best quality are grown in abundance on the shores and islands of Lake Erie.

Forests. Nearly the entire state was originally covered with forests, but it is estimated that less than one fifth of its area is now wooded, over four fifths being occupied by improved farms. The native trees include oak, maple, beech, hickory, poplar, ash, walnut, chestnut, cherry, elm, sycamore, buckeye (which gives Ohio its popular name of the Buckeye State), cottonwood, pine, hemlock, and cedar.

Wild Animals.—While the deer, bears, and other large wild animals have disappeared, the smaller animals, including birds, are still quite numerous, and are protected by strict game laws.

Minerals. Ohio is rich in minerals. The coal measures in the eastern and southeastern parts occupy an area of about 11,000 square miles. They underlie almost entirely 21 counties, and large beds are found in 15 others. The coal is bituminous and of a fine quality.

There are valuable deposits of iron ore in the counties near the Ohio River, between Marietta and Portsmouth. These iron ores are especially rich in Lawrence, Jackson,

Iron Works, Zanesville.

Encaustic Tile Works.

and Scioto counties, and they produce the finest quality of steel. An important deposit of blackband ore is found in Tuscarawas and Stark counties in the eastern part.

In the state are many valuable quarries of limestone. The sandstone quarries of Lorain and Cuyahoga counties are very extensive. The largest sandstone quarry in the country is at Berea, and grindstones from "Berea grit" are famous.

Petroleum is found in many counties, but mostly in the Lima field, including portions of Allen, Auglaize, and Wood counties; and in the Macksburg field, including Washington, Noble, Morgan, and Athens counties.

Natural gas is chiefly obtained in the vicinity of Findlay. It is also found in several eastern counties, and in other localities. It is used in many cities and towns.

Among the other minerals are brick clay, potter's clay, gypsum, cement, and salt. Salt is manufactured from salt water obtained by boring deep wells in certain sections of the coal-bearing region. These wells are numerous in and around Pomeroy.

Manufactures. Ohio possesses great natural advantages for manufactures. Not only has it an abundant supply of water power, of coal, iron, and other minerals, and of timber and farm products, but it is also situated near the great markets for manufactured wares, with unsurpassed facilities for transportation.

The manufactures of the state include iron and steel products, agricultural implements, flour and gristmill products, lumber, tobacco, railroad supplies, street cars, packed meats, liquors, clothing, leather, boots and shoes, hats and caps, furniture, carriages and wagons, bicycles, glass, bricks, pottery, encaustic tiles, paper, tin, and canned fruits.

Fisheries. The fisheries are mostly in Lake Erie, which abounds with whitefish, trout, bass, and other food fishes. The chief fishing ports are Conneaut, Ashtabula, Cleveland, Huron, Sandusky, Put-in-Bay, and Toledo.

Wagon and Machine Shops.

Commerce and Transportation. The commerce of Ohio is large and varied, but from its geographical position the exchanges of this commonwealth are chiefly domestic and interstate. Coal, lumber, iron, grain, and other productions, and a great variety of manufactured articles, are shipped in all directions.

The facilities for transportation are extensive, including not only lake and river navigation and canals, but nearly 9000 miles of railroads that reach every county in the state. All the east and west trunk lines north of the Ohio River necessarily cross the state, giving ready access to the great centers of commerce both in the West and on the Atlantic seaboard. In railroad mileage Ohio is one of the foremost states in the Union.

The canals of the state are several hundred miles in length, the Ohio and the Miami and Erie canals being the most important. The Ohio Canal extends from Cleveland to Portsmouth, and the Miami and Erie from Toledo to Cincinnati. For many years these water highways contributed much to the growth and prosperity of the state, and their service to internal trade was of great importance.

HISTORY.

As late as the middle of the seventeenth century Indian tribes were in undisturbed possession of the territory northwest of the Ohio River. In 1670 the French explorer La Salle discovered the Ohio River. The king of France laid claim to the entire region drained by the St. Lawrence, and later to the valley of the Mississippi, including the Ohio valley. The king of England claimed all of the continent west of his colonies on the Atlantic coast. These conflicting claims led to long and bloody

Brick Works — Southeastern Ohio.

Post Office Building, Cincinnati.

wars between France and England, in the last of which, known as the French and Indian war, many Indians were the allies of France. The English were finally victorious, and in 1763 the territory, including the present state of Ohio, was ceded by France to Great Britain.

But the defeat and surrender of the French did not lead to the submission of their Indian allies. English hunters and traders invaded their rich hunting grounds in the Ohio valley and on the lake shores. The Indians tried to drive the invaders out, and bitter warfare lasted for a number of years. In the autumn of 1774 Lord Dunmore, governor of Virginia, led a successful expedition against the Indians, and, at a fortified camp in the valley of the Scioto, concluded a treaty with them.

The conflict between the Indians and whites was renewed in the war of the Revolution, the Indians siding with the British, who encouraged and aided their warfare against the colonists. In the course of this war two events of great atrocity occurred in Ohio. The first was the "Tuscarawas massacre," in which a band of reckless men, under command of Colonel David Williamson, slaughtered without mercy ninety Christian Indians, men, women, and children, at Gnadenhütten. This massacre was one of the most fiendish acts ever perpetrated by the whites. It was savagely avenged by the Delawares. They captured Colonel William Crawford, who had no part in the Gnadenhütten massacre, and burned him at the stake.

At the close of the Revolutionary War in 1783 the entire British possessions between the Alleghanies and the Mississippi became a part of the United States; but the question of the ownership of the lands was soon in dispute. Seven of the states—Massachusetts, Connecticut, New York, Virginia, North Carolina, South Carolina, and Georgia—claimed the lands west of them to the Mississippi River; but the United States and the several states admitted that the Indians were the original owners of the country. This dispute was settled by the ceding of the state claims (two reservations excepted) to the United States. Connecticut reserved for her use until 1800 a tract situated south of Lake Erie, and extending 120 miles west of the boundary of Pennsylvania. This district was afterwards known as the Western Reserve. Virginia reserved the territory lying between the Scioto and the Little Miami rivers for the use and benefit of her Revolutionary soldiers.

In 1787 Congress established the Northwest Territory, prohibiting slavery in it, and providing for its future division into from three to five states. General St. Clair was appointed territorial governor.

Bridge across the Ohio at Cincinnati.

In the same year Congress sold to the Ohio Company, organized in New England, a large tract of land, including the Lower Muskingum valley, and in 1788 this company made the first permanent settlement within the present limits of the state, at Marietta.

A second permanent settlement was made in 1788 at Columbia, near the mouth of the Little Miami, and soon afterwards another, at Losantiville, opposite the mouth of the Licking River. Both of these settlements are within the present limits of Cincinnati.

A tide of immigration soon set in. The new settlements were regarded by the Indians as invasions of their country. The result was a bloody strife, in which the settlers were great sufferers. Peace was finally made in 1795. The Northwest Territory now rapidly increased in population.

In 1800 Congress divided it, the eastern part retaining the name of the Northwest Territory, and the western part being called Indiana Territory.

In 1802 Congress passed an enabling act, and in November of that year a convention met in Chillicothe and framed a constitution. On February 19, 1803, Ohio was admitted to the Union as a state. The northwestern boundary of

Lake View Park, Cleveland.

the state was the parallel of 41° 36′ until 1836, when the narrow strip was added which includes the site of Toledo.

The first general assembly met in Chillicothe in March, 1803. Edward Tiffin was the first governor. Columbus became the capital in 1816.

The growth of Ohio after its admission to the Union was remarkably rapid. In 1900 the population, according to the federal census, was 4,157,545, being about 102 persons to the square mile.

State Capitol, Columbus.

Government. The legislative power is vested in a general assembly, which consists of a senate and a house of representatives, whose members are all elected for two years. Regular sessions of the general assembly are biennial, beginning on the first Monday in January, even years.

Toledo.

The executive department includes a governor, lieutenant-governor, secretary of state, auditor, treasurer, attorney-general, commissioner of common schools, dairy and food commissioner, and board of public works, all elected by the people. Among the executive officers appointed by the governor are the adjutant-general, superintendent of insurance, commissioner of railroads and telegraphs, supervisor of public printing, labor commissioner, inspector of mines, and inspector of workshops and factories.

The judicial department comprises a supreme court, circuit courts, courts of common pleas, probate courts, and other minor courts, and special superior courts in certain cities.

Ohio has 2 senators and 21 representatives in Congress, and 23 votes in the electoral college. The state is divided into 88 counties, and each county is subdivided into townships.

Education. Ohio was a pioneer state in the establishment of public instruction. No state in the Union has made more liberal provision for the free education of its youth.

The annual expenditure for public school purposes in Ohio is about $22,000,000. The public schools are under the general supervision of the state commissioner of common schools, and under the immediate direction of local boards of education, assisted in the cities and towns, and in some townships, by superintendents. These schools employ over 26,000 teachers, and have an annual enrollment of about 1,000,000 pupils.

The state makes liberal provision for the education of the blind, the deaf and dumb, and the feeble-minded; also for soldiers' and sailors' orphans. The larger cities maintain normal or training schools, chiefly for the training of primary teachers.

High schools are established in large towns and villages, and in many townships. There are also several private normal schools; and other private and denominational schools, principally in cities, are numerous.

The Ohio State University is located at Columbus. Ohio University and a normal school, at Athens, and Miami University and a normal school, at Oxford, are also state institutions. Higher education is further provided for in more than 60 colleges, universities, and professional schools.

CITIES.

Cleveland is on Lake Erie at the mouth of the Cuyahoga River, and had a population of 381,768 in 1900. It is a port of entry, with a commodious ship canal in its harbor. Its facilities for transportation by lake and canal early gave the city an extensive commerce, which has been greatly increased by the numerous railroads that connect Lake Erie with the interior. Most of the dairy products of the Western Reserve are sent here for distribution.

Its water communication with the rich mines of Lake Superior, and its proximity to an abundance of coal, have made Cleveland a great center of the iron industry.

Dayton.

Its extensive manufactures include iron and steel, foundry and machine-shop products, clothing, packed meat, beer, electrical supplies, refined petroleum, bridges, paints, chemicals, hardware, and a great variety of other articles. Shipbuilding is a large industry.

Cleveland is noted for its wide and well-paved streets, beautiful parks, and handsome business blocks, public buildings, and residences. The public schools rank among the best in the country. Cleveland is the seat of the Western Reserve University, the Case School of Applied Science, several medical colleges, and various other educational institutions. The city has a large public library.

Cincinnati is situated on the Ohio River, about midway between its head at Pittsburg, Pa., and its junction with the Mississippi at Cairo, Ill. The population in 1900 was 325,902. Railroads radiate from the city in all directions, crossing the Ohio by several bridges to the Kentucky shore. Cheap fuel for domestic and manufacturing purposes is obtained from the Ohio and Pennsylvania coal fields by way of the river, and several of the railroads connect Cincinnati directly with some of the richest mineral regions.

The commerce of Cincinnati, both by rail and river, is very extensive, and it has an immense wholesale and retail trade. Here are also many large manufactories, the chief products of which are clothing, machinery, liquors, packed meat, boots and shoes, and tobacco. Cincinnati has fine public buildings and private residences, and its parks and suburbs are widely known for their beauty. The Art Museum and the Art Academy have a commanding position in Eden Park. The Zoölogical Gardens attract many visitors.

This city is the seat of the University of Cincinnati, which occupies a beautiful site in Burnet Woods Park, of Lane Theological Seminary, St. Xavier College, the Hebrew Union College, the Cincinnati Law College, the Ohio Mechanics' Institute, the Cincinnati Observatory, medical and dental colleges of high rank, and the College of Music and other music schools. There are in the city a public library, the Young Men's Mercantile Library, the Law Library, and other large collections of books. The public schools have long held a high rank.

Toledo, the county seat of Lucas county, on the Maumee River, 5 miles from its mouth, has an excellent harbor, an extensive system of docks, and a large lake trade.

This city is an important railroad center, and a distributing point for Michigan lumber and salt, and for grain and live stock. It also ships great quantities of coal and iron, manufactured products, and fish. Chief among its extensive and varied manufactures are the products of its flouring mills, foundries and machine shops, breweries, and oil refineries. Toledo has excellent public schools, many charitable institutions, a public library, and various professional schools.

Columbus, the capital of Ohio, is situated in the heart of a fertile agricultural region. Several great railroad lines intersect here. The city is directly connected with the rich coal and iron region of southeastern Ohio. Besides a large wholesale and retail trade, it has extensive manufactures.

Among the numerous manufactories are foundries, blast furnaces, steel works, machine shops, boot and shoe factories, breweries, tanneries, flour mills, boiler and car works, and carriage and furniture factories. Columbus has magnificent public buildings. It is the seat of the Ohio State University, Capital University, the supreme court of the state, United States courts, and the Ohio State Library. The city's public schools are of the highest rank.

Dayton, the county seat of Montgomery county, is an important railway center. It has abundant water power, and manufactures machinery, cash registers, agricultural implements, and many other articles. The National Soldiers' Home, located here, has an imposing group of buildings. Dayton has an excellent system of public schools.

Youngstown, the county seat of Mahoning county, has great railroad facilities. It is in the center of the block-coal district, and is extensively engaged in the manufacture of iron. It has large blast furnaces, rolling mills, and steel works, and many other important manufactories.

Akron, the county seat of Summit county, is situated in a fine dairy region, and has a large wholesale trade and manufactures rubber goods, machinery, clay products, and other articles. Here is Buchtel College.

Springfield, the county seat of Clark county, is a railroad center in a rich agricultural region. It has a large trade in fruit, grain, and live stock. The city is noted for the manufacture of agricultural implements and machinery. It is the seat of Wittenberg College.

Canton, the county seat of Stark county, lies in a fine wheat region, and also near rich coal and iron beds. Among its manufactures are iron and steel, agricultural implements, machinery, harness, furniture, brick and tile, and various other articles.

Hamilton, the county seat of Butler county, is situated on the Miami River, and is an important manufacturing center. Machinery, safes and vaults, malt liquors, cereal products, and carriages and wagons are among its chief manufactures.

Zanesville, the county seat of Muskingum county, is at the head of slackwater navigation on the Muskingum River. It has fine water power, and manufactures clay products, cars, machinery, flour, and lumber.

Lima, the county seat of Allen county, is at the center of a rich petroleum field. It also has various manufactures, the most important of which are steam engines and railroad cars.

Sandusky, the county seat of Erie county, is on Sandusky Bay, and has an extensive trade in lumber, grapes, ice, fish, and various manufactures. It is the seat of the Ohio Soldiers' and Sailors' Home.

Newark, the county seat of Licking county, is an important railroad and canal center. Here are railroad car and repair shops, and glass, iron and steel, machine, and stove works.

Portsmouth, the county seat of Scioto county, has a large trade by river and canal, and manufactures iron and steel, boots and shoes, lumber, machinery, and brick.

Mansfield, the county seat of Richland county, is an important railroad junction point. It has extensive manufactures of machinery, boilers, electrical supplies, and agricultural implements.

Findlay, the county seat of Hancock county, is the center of a natural gas district, and manufactures machinery, pottery, refined petroleum, glass, furniture, and flour. Findlay College is located here.

East Liverpool, in Columbiana county on the Ohio River, is noted for its potteries, which make many varieties of ware.

Lorain, in Lorain County on Lake Erie, has an important trade by lake and rail in iron ore, coal, grain, and lumber. Here are extensive iron and steel works.

Steubenville, the county seat of Jefferson county, is situated on the Ohio River. It has a large coal trade, and extensive manufactures of iron and steel, glass and pottery.

Marietta, the county seat of Washington county, is located in the petroleum field, and manufactures tin plate, furniture, carriages, drills, and boats. Here is Marietta College.

Chillicothe, the county seat of Ross county, is in the rich Scioto valley. It is an important mining and agricultural center, with many manufactures and a large local trade.

Ashtabula, in Ashtabula county, is near a fine harbor, and has an extensive trade in coal and iron ore. The surrounding district has large agricultural and dairying interests.

Piqua, in Miami county, has many important manufactures which include steel, stoves, straw-board, linseed-oil, hardware, and furniture.

Massillon, in Stark county, is a railroad and canal center in the iron and sandstone region. Here are large iron and steel, lumber, and paper mills, and bridge works.

Ironton, the county seat of Lawrence county, has a large river trade, and iron and coal mining interests. Iron and steel, nails, stoves, lumber, wagons and carriages, and fire brick are among the manufactures.

Marion, the county seat of Marion county, is an important railroad center. Among its various manufactures are machinery, agricultural implements, brick and tile, and lime.

Tiffin, the county seat of Seneca county, is an important railroad junction, and has various manufactures. Here is Heidelberg University.

The following cities of Ohio had from 5000 to 10,000 inhabitants in 1900: *Bellaire*, in coal and limestone region; glass works, foundries and machine shops. *Middletown*, paper mills, foundries and machine shops, and tobacco factories. *Lancaster*, in an agricultural and natural gas region; glass, agricultural implements, shoes; seat of Industrial School for Boys. *Alliance*, prosperous trade and manufactures; seat of Mount Union College. *Elyria*, hardware and grindstones. *Xenia*, in rich agricultural region; cordage, shoes, and paper; seat of Ohio Soldiers' and Sailors' Orphans' Home. *Warren*, coal, iron, agricultural, and dairying district; furniture, wagons, carriages, and automobiles, machinery, and iron work. *Fremont*, flourishing commercial city; also important manufactures. *Cambridge*, coal mines, petroleum, and gas wells, manufactures of iron, tin plate, and furniture. *Wellston*, coal mines, machine shops, foundries. *Delaware*, clay products, woolen goods, and agricultural implements; seat of the Ohio Wesleyan University. *Martins Ferry*, agricultural and coal mining district; manufactures of iron and steel, tin plate, glass, brick, machinery, and agricultural implements. *Fostoria*, large trade and many important manufactures. *Salem*, iron and steel, and machinery; center of fine farming district. *Defiance*, machinery, wagons and carriages, plows, and stoves; seat of Defiance College. *Niles*, manufactures of iron and steel. *Galion*, railroad shops, and manufactures of carriages, stoves, and machinery. *Norwalk*, railroad center, surrounded by a good farming country; manufactures. *Kenton*, manufactures of lumber. *Urbana*, railroad center, with manufacturing industries; seat of Urbana University. *Bellefontaine*, agriculture and manufactures; cement, carriages, bridges, and locomotives. *Mount Vernon*, machinery, bridges, furniture, and carriages. *Bucyrus*, machinery, agricultural implements, and wood work. *Vanwert*, agricultural district. *New Philadelphia*, coal, iron, farming implements, tiles, wooden goods. *Wellsville*, steel, iron, machinery, and terra cotta. *Wooster*, machinery, furniture, pianos, wagons; seat of the University of Wooster. *Troy*, carriages, wagons, electrical supplies, and distilled liquors. *Washington C. H.*, lumber, boots and shoes, agricultural implements, and woolen goods. *Sidney*, manufacturing and agriculture. *Greenville*, manufacturing and agriculture; grain elevators. *Gallipolis*, coal mining, agriculture, and manufacturing.

PRINCIPAL CITIES, TOWNS, AND VILLAGES, 1900.

Ada	2,576	Delphos	4,517	London	3,511	Port Clinton	2,450
Addyston	1,513	Delta	1,230	Lorain	16,028	Portsmouth	17,870
Akron	42,728	Dennison	3,763	Loudonville	1,581	Ravenna	4,003
Alliance	8,974	Deshler	1,628	Louisville	1,374	Reading	3,076
Antwerp	1,206	Doylestown	1,057	Loveland	1,260	Richwood	1,640
Arcanum	1,225	Dresden	1,600	Lowellville	1,137	Ripley	2,248
Ashland	4,087	Dunkirk	1,222	McComb	1,195	Rockford	1,207
Ashtabula	12,949	East Cleveland	2,757	McConnellsville	1,825	Rockport	2,038
Athens	3,066	East Liverpool	16,485	Madisonville	3,140	Rocky River	1,319
Barberton	4,354	East Palestine	2,493	Manchester	2,003	Roseville	1,207
Barnesville	3,721	Eaton	3,155	Mansfield	17,640	Sabina	1,481
Batavia	1,029	Edgerton	1,043	Marblehead	997	St. Bernard	3,384
Bedford	1,486	Elmore	1,025	Marietta	13,348	St. Clairsville	1,210
Bellaire	9,912	Elmwood Place	2,532	Marion	11,862	St. Marys	5,359
Bellefontaine	6,649	Elyria	8,791	Martins Ferry	7,760	St. Paris	1,222
Bellevue	4,101	Evanston	1,716	Marysville	3,048	Salem	7,582
Bellville	1,039	Fairport	2,073	Massillon	11,944	Salineville	2,353
Berea	2,510	Findlay	17,613	Maumee	1,856	Sandusky	19,664
Blanchester	1,788	Forest	1,155	Mechanicsburg	1,617	Scio	1,214
Bluffton	1,783	Fort Recovery	1,097	Medina	2,232	Shawnee	2,966
Bond Hill	1,081	Fostoria	7,730	Miamisburg	3,941	Shelby	4,685
Bowling Green	5,067	Franklin	2,724	Middleport	2,799	Shreve	1,043
Bradford	1,254	Fremont	8,439	Middletown	9,215	Sidney	5,688
Bradner	1,148	Galion	7,282	Milford	1,149	Somerset	1,124
Bridgeport	3,963	Gallipolis	5,432	Millersburg	1,998	South Brooklyn	2,343
Bryan	3,131	Garrettsville	1,145	Mineral City	1,220	South Charleston	1,096
Bucyrus	6,560	Geneva	2,342	Minerva	1,200	Spencerville	1,874
Byesville	1,267	Georgetown	1,529	Mingo Junction	2,954	Springfield	38,253
Cadiz	1,755	Germantown	1,702	Minster	1,465	Steubenville	14,349
Cambridge	8,241	Gibsonburg	1,791	Monroeville	1,211	Stryker	1,206
Canal Dover	5,422	Girard	2,630	Montpelier	1,869	Tiffin	10,989
Canal Fulton	1,172	Glendale	1,545	Mount Gilead	1,528	Tippecanoe	1,703
Canton	30,667	Glenville	5,588	Mount Healthy	1,354	Toledo	131,822
Cardington	1,354	Glouster	2,155	Mount Vernon	6,633	Toronto	3,523
Carey	1,816	Grafton	1,098	Murray City	1,118	Troy	5,881
Carrollton	1,271	Granville	1,425	Napoleon	3,639	Uhrichsville	4,582
Carthage	2,559	Greenfield	3,979	Nelsonville	5,421	Union City	1,282
Cedarville	1,189	Greenville	5,501	Newark	18,157	Upper Sandusky	3,355
Celina	2,815	Hamilton	23,914	New Bremen	1,318	Urbana	6,808
Chagrin Falls	1,586	Harrison	1,456	Newburg	5,909	Van Wert	6,422
Chardon	1,360	Hartwell	1,833	Newcomerstown	2,659	Vermilion	1,184
Chicago Junction	2,348	Hicksville	2,520	New Lexington	1,701	Versailles	1,478
Chillicothe	12,976	Hillsboro	4,535	New London	1,180	Wadsworth	1,764
Cincinnati	325,902	Holgate	1,237	New Philadelphia	6,213	Wapakoneta	3,915
Circleville	6,991	Hubbard	1,230	New Richmond	1,916	Warren	8,529
Cleveland	381,768	Huron	1,708	New Straitsville	2,302	Washington C. H	5,751
Cleves	1,328	Hyde Park	1,691	Niles	7,468	Washingtonville	1,092
Clyde	2,515	Irondale	1,136	North Amherst	1,758	Wauseon	2,148
Coalgrove	1,191	Ironton	11,868	North Baltimore	3,561	Waverly	1,854
Coalton	1,625	Jackson	4,672	Norwalk	7,074	Wellington	2,094
College Hill	1,104	Jacksonville	1,047	Norwood	6,480	Wellston	8,045
Collinwood	3,639	Jamestown	1,205	Oak Harbor	1,631	Wellsville	6,146
Columbiana	1,339	Jefferson	1,319	Oberlin	4,082	Westerville	1,462
Columbus	125,560	Kelleys Island	1,174	Orrville	1,901	West Liberty	1,236
Columbus Grove	1,935	Kent	4,541	Ottawa	2,322	West Union	1,033
Conneaut	7,133	Kenton	6,852	Oxford	2,009	Williamsburg	1,002
Continental	1,104	Lakewood	3,355	Painesville	5,024	Willoughby	1,753
Corning	1,401	Lancaster	8,991	Paulding	2,080	Wilmington	3,613
Coshocton	6,473	Larue	997	Payne	1,336	Winton Place	1,219
Covington	1,791	Lebanon	2,867	Pemberville	1,081	Woodsfield	1,801
Crestline	3,282	Leetonia	2,744	Perrysburg	1,766	Wooster	6,063
Cuyahoga Falls	3,186	Leipsic	1,726	Piqua	12,172	Wyoming	1,450
Dayton	85,333	Lima	21,723	Plain City	1,432	Xenia	8,696
Defiance	7,579	Lisbon	3,330	Pleasant City	1,006	Yellow Springs	1,371
De Graff	1,150	Lockland	2,695	Plymouth	1,154	Youngstown	44,885
Delaware	7,940	Logan	3,480	Pomeroy	4,639	Zanesville	23,538

Dayton One Of Few Cities Showing Gain

WASHINGTON, Sept. 24.—(AP)—Only nine Ohio counties declined in population in the past 10 years, a preliminary report of the census bureau showed today.

Guernsey co.'s decline of 6.8 per cent—from 41,486 to 38,654—was the greatest. Other counties with population losses were Auglaize (.4), Hardin (2.3), Lucas (1.6), Marion (1.1), Noble (2.5), Perry (1.3), Putnam (.3), and Summit (2.4).

Of the 79 counties gaining in population, Geauga led with 25.8 per cent.

Among the cities, Cleveland lost 22,044, Akron 11,901, Toledo 9622, and Youngstown 2576.

Gaining were Cincinnati, 1692; Columbus, 14,372, and Dayton, 10,474.

The state's total population rose from 6,646,697 in 1930 to 6,889,623 in 1940.

Ohio cities of more than 10,000 population follow:

City	Population 1940	Population 1930	Per Cent of Increase (x) 1930-40	Per Cent of Increase (x) 1920-30
Akron	243,130	255,040	— 4.7	22.4
Alliance	23,281	23,047	1.0	6.7
Ashland	12,639	11,141	13.4	20.5
Ashtabula	21,209	23,301	— 9.0	5.5
Barberton	23,667	23,934	— 1.1	27.2
Bellaire	13,839	13,327	3.8	—11.5
Cambridge	14,980	16,129	— 7.1	23.1
Campbell	13,777	14,673	— 6.1	30.6
Canton	108,337	104,906	3.3	20.5
Chillicothe	20,078	18,340	9.5	15.8
Cincinnati	452,852	451,160	0.4	12.4
Cleveland	878,385	900,429	— 2.4	13.0
Cleveland Heights	55,031	50,945	8.0	234.4
Columbus	304,936	290,564	4.9	22.6
Coshocton	11,482	10,908	5.3	0.6
Cuyahoga Falls	20,874	19,797	5.4	94.1
Dayton	211,456	200,982	5.2	31.7
East Cleveland	39,395	39,667	— 0.7	45.3
East Liverpool	23,106	23,329	— 1.0	9.0
Elyria	25,031	25,633	— 2.3	25.2
Euclid Village	17,538	12,751	37.5	279.2
Findlay	20,116	19,363	3.9	13.8
Fostoria	13,439	12,790	5.1	28.1
Fremont	14,673	13,422	9.3	7.7
Garfield Heights	16,983	15,589	8.9	511.3
Hamilton	50,632	52,176	— 3.0	31.5
Ironton	15,840	16,621	— 4.7	18.7
Lakewood	69,056	70,509	— 2.1	69.0
Lancaster	21,886	18,716	16.9	27.3
Lima	44,764	42,287	5.9	2.3
Lorain	43,927	44,512	— 1.3	19.4
Mansfield	36,895	33,525	10.1	20.5
Marietta	14,514	14,285	1.6	— 5.6
Marion	30,785	31,084	— 1.0	11.4
Martins Ferry	14,366	14,524	— 1.1	24.8
Massillon	26,615	26,400	0.8	51.5
Middletown	31,230	29,992	4.1	27.1
Mount Vernon	10,062	9,370	7.4	1.4
Newark	31,294	30,596	2.3	14.5
New Philadelphia	12,264	12,365	— 0.8	15.4
Niles	16,222	16,314	— 0.6	24.7
Norwood	33,947	33,411	1.6	33.8
Painesville	12,237	10,944	11.8	50.5
Parma	16,304	13,899	17.3	(xxx)
Piqua	15,900	16,009	— 0.7	6.4
Portsmouth	40,474	42,560	— 4.9	28.9
Salem	12,268	10,622	15.5	3.1
Sandusky	24,626	24,622	(xx)	7.5
Shaker Heights	23,154	17,783	30.2	1000.4
Springfield	70,712	68,743	2.9	13.0
Steubenville	37,586	35,422	6.1	24.3
Struthers	11,786	11,249	4.8	92.4
Tiffin	15,973	16,428	— 2.8	14.3
Toledo	281,096	290,718	— 3.3	19.6
Warren	42,413	41,062	3.3	51.8
Wooster	11,530	10,742	7.3	30.9
Xenia	10,913	10,507	3.9	15.3
Youngstown	167,426	170,002	— 1.5	28.4
Zanesville	37,409	36,440	2.7	23.2

(x)—A minus sign (—) denotes decrease.
(xx)—Less than one-tenth of one per cent.
(xxx)—Incorporated between 1920 and 1930.

area of largest counties
1 Ashtabula . . . 723 sq mi
2 Licking . . . 669
3 Ross 668
4 Muskingum 664
5 Trumbull . . . 633
6 Washington . . 630
7 Wood 612
8 Darke 596
9 Scioto 623
10 Stark 566

Census Year	Number	Percentage Increase
1790	3,929,214	—
1800	5,308,483	35.1%
1810	7,239,881	36.4
1820	9,638,453	33.1
1830	12,866,020	33.5
1840	17,069,453	32.7
1850	23,191,876	35.9
1860	31,443,321	35.6
1870	38,558,371	22.6
1880	50,155,783	30.1
1890	62,947,714	25.5
1900	75,994,575	20.7
1910	91,972,266	21.0
1920	105,710,620	14.9
1930	122,775,046	16.1
1940	131,409,881	7.0

GEOGRAPHIC TABLOID

OHIO

Nickname—"Buckeye."
Motto—(None).
State Flower—Scarlet Carnation.
Area—41,040 sq. mi. (34th in rank).
Population—6,907,612 (4th in rank; 168.0 inhabitants to sq. mi.). 1940
Illiteracy—Whole state, 2.3 per cent.
Wealth (estimated)—$16,075,000,000 ($2,395 per capita).
Settled—1788.
Entered Union—1803. 1940
Capital—Columbus (Pop. 306,087).
Largest City—Cleveland (Pop. 878,336).

Government—Legislature consists of a senate of 36 members and a house of representatives of 138 members. Represented in Congress by two senators and 24 representatives.

Governor—John W. Bricker (Rep.); term, two years; salary, $10,000.

Products—Iron and steel, rubber tires and tubes, motor vehicles and parts, electrical machinery and supplies, men's clothing, boots and shoes, dairy products, paper, paints and varnishes, pottery and clay products, coal, petroleum, natural gas, limestone, lime, livestock, cereals, hay, potatoes, tobacco, vegetables, sugar beets, corn, fruit, etc.

Politics—In 1940 Presidential election Democrats polled 1,733,139 votes and Republicans 1,586,773. Electoral vote—Democrat 26.

Aids to Teachers of Geography

Johnson's Mathematical Geography	$1.00
Gannett, Garrison, and Houston's Commercial Geography	1.25
Dryer's Lessons in Physical Geography	1.20
Everly, Blount, and Walton's Laboratory Lessons in Physical Geography	.56
Hinman's Eclectic Physical Geography	1.00
Chamberlain's Field and Laboratory Exercises in Physical Geography	.50
Maury-Simonds's Physical Geography	1.20
Waldo's Elementary Meteorology	1.50
Price's Observations and Exercises on the Weather,	.30
National Geographic Monographs, one volume	2.50

Physiographic Processes ..... J. W. Powell
Physiographic Features ..... J. W. Powell
Physiographic Regions of the U. S. .... J. W. Powell
Present and Extinct Lakes of Nevada ... I. C. Russell
Beaches of the Atlantic Coast ..... N. S. Shaler
The Northern Appalachians ..... Bailey Willis
Niagara Falls and their History ..... G. K. Gilbert
Mt. Shasta—A Typical Volcano ..... J. S. Diller
Physical Geography of Southern New England ..... W. M. Davis
The Southern Appalachians ..... C. W. Hayes

AMERICAN BOOK COMPANY

NEW YORK CINCINNATI CHICAGO